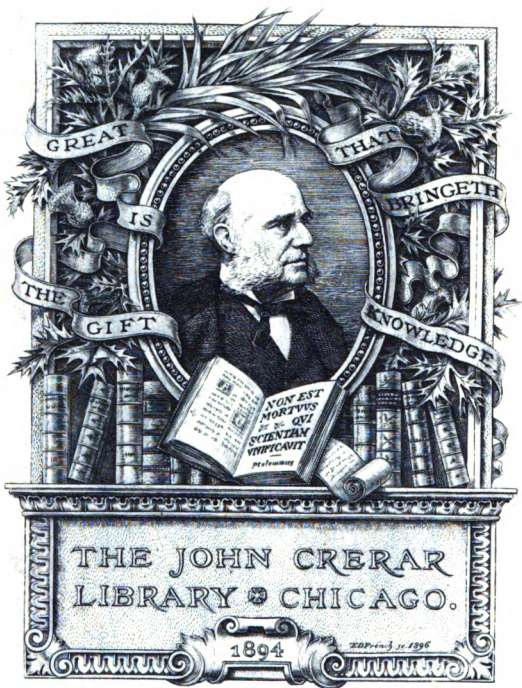


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THE  
A B C  
OF  
Rifle, Revolver and Pistol  
Shooting

By  
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## PREFACE.

There is no dearth of books treating of the scientific side of rifle, revolver, and pistol shooting. The accomplished marksman has access to many volumes the reading of which will add to his fund of knowledge of the shooting game and further his advance in this most interesting art, but for the beginner—the mere novice—there seems to have been but little written. Most books on firearms and their use would serve well as text-books in a college for shooting, but the preparatory course has been neglected.

The author has had no little experience in teaching beginners in this subject, and any attempts to use the prescribed text-books, or standard manuals, have resulted in imparting to the student a lot of detail entirely beyond his shooting comprehension. It was found necessary to prepare a series of lectures along elementary lines for use in theoretical instruction, and various practical exercises for the practical work. The results of this work are contained in the following chapters.

Interest in shooting has greatly increased in recent years and the tendency, of the times is for a much more wide-spread interest, and the author hopes this little volume may add a mite to the growing enthusiasm.

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No great claims are made herein of original discoveries, but well-known principles and practices are treated as far as possible in a manner which it is hoped is within the mental grasp of any novice in the art.

IRA L. REEVES.

University of Vermont,

Burlington, Vt., February 1, 1913.

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## CHAPTER I.

## THE DANGER IN HANDLING FIREARMS.

Beyond all question the most important thing to be learned in connection with shooting is the careful handling of firearms, and the extreme danger of accidental discharges. That there is an ever-present danger should be always borne in mind. Firearms are made to kill; they are just as effective in doing this through accidental discharge as when deliberate aim is taken at the person or thing which it is intentionally proposed to kill or injure, and the trigger pulled. The range is just as great and the bullet's penetration just as deep, and its power to inflict fatal or serious wounds just as potent, in the one case as in the other.

The muzzle of a firearm is of course the dangerous end. Sometimes in reading in the daily press of the great number of accidental injuries due to careless handling, one is tempted to believe the old proverb, "A gun is dangerous without lock, stock, or barrel," is true. The muzzle being the dangerous end, the observance of a rule which would prevent the pointing of that part of the firearm in the direction of any person or thing to which the deliberate intention is not to do injury would eliminate the likelihood of accidental injury or killing. The following rule should be memorized, not as a parrot memorizes, but with thorough understanding. It should not

only be observed by the reader in his own handling of firearms, but he should see that others over whom he may have influence or authority live up to the principles it contains:

#### THE ACCIDENT-PROOF RULE.

*The muzzle of a firearm should never point in a direction in which, if discharged, it would do injury where injury is not meant to be done.*

It must be understood that this means *at all times*. The question of whether or not the gun is loaded does not enter.

It is not difficult to distinguish at once the experienced rifle or revolver shot from the amateur. The first movement of the experienced man is that of opening the cartridge chamber and making an inspection for loads. Even should he find the chamber empty, he continues to handle the gun in the same cautious manner as if the weapon were loaded. The amateur is not so careful. He frequently takes it for granted that the arm is not loaded and proceeds to point and aim promiscuously without regard to possible danger to life or injury to property. Sometimes he makes inquiry, "Is it loaded?" and is content with a negative answer, sparing himself the pains of a personal examination.

The rule above given applies to all occasions. There can be no possible condition that would warrant a violation of it. It applies to cleaning, viewing, sighting, snapping, and every other possible handling of the firearm.

*"Didn't Know It Was Loaded."*

By far the greater number of accidents due to handling firearms are caused by the fact that the one who commits the blunder is under the impression the gun is not loaded. The first words spoken—the first excuse offered—invariably are these: "I didn't know it was loaded." Remember that your knowledge of whether or not a gun is loaded is a question of memory. The memory of no man is infallible. People forget where they have placed their hats; they forget the day of the week. Ask a man for a match, and probably he will say, "I haven't any," and at the same time search his pockets and find one which he had forgotten. Your fountain pen is frequently empty when you think it is full, or is full when you think it is empty. It is just the same with a firearm. No one knows absolutely when a gun is loaded or when it has no loads in it.

This calls for the companion rule of the one just given:

*All Firearms Are at All Times Loaded.*

This rule is just as true as the fallibility of man's memory; or, a better way to express it is, it is expedient because of the fallibility of man's memory. This may be poor logic, but is certainly safe practice.

There is just one answer to the question, "Is your gun loaded?" and that is, *Yes*. The incorrect statement of a condition of your firearm of which you or no one else is certain is preferable to possible fatal injury to yourself or some one else.

*"I Took Him for a Deer."*

The open hunting season every year brings a long list of maiming and fatalities due to inexperienced hunters firing when they are not certain of the identity of the thing fired at. There can be no excuse offered where a hunter, or would-be hunter, has fired at a companion, or fellow-hunter, mistaking him for a deer, or other animal the object of his pursuit. The trigger should never be pulled until the identity of the thing fired at has been established beyond any doubt.

Some idea of the tragic results of this form of carelessness may be obtained from a statement of the number of dead and wounded due to mistakes of this character occurring during the open hunting season in the years 1910, 1911, and 1912:

Year.	Number Killed.	Number Wounded.
1910	113	Not Given.
1911	100	37
1912	103	51



## CHAPTER II.

NOMENCLATURE OF THE RIFLE AND REVOLVER, AND  
DEFINITIONS.

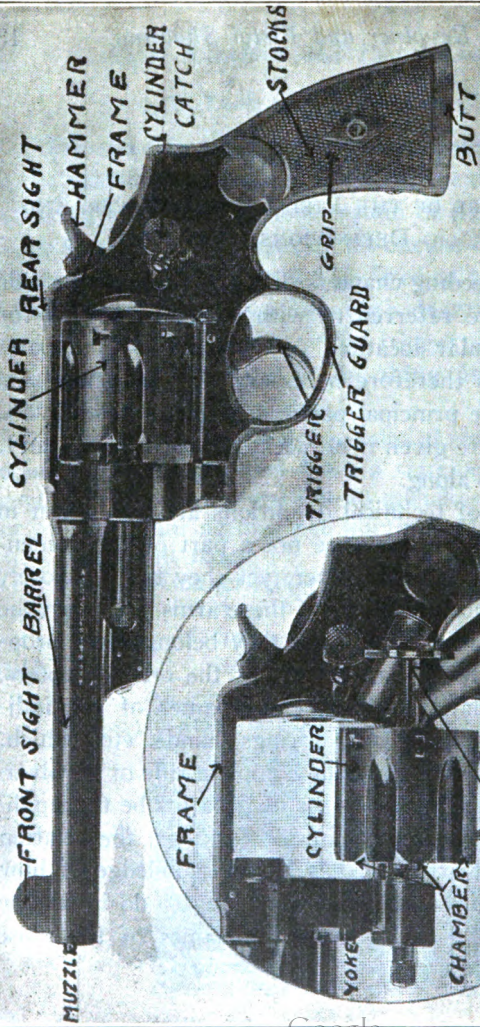
In the succeeding chapters different parts of the rifle and revolver are referred to without explaining at the time the particular location, or function, of the parts mentioned; it is therefore necessary for the person unfamiliar with the principal parts of firearms to study the nomenclature here given if he wishes to read understandingly as he goes along.

A number of technical definitions are also given in this chapter. While they are not a part of the nomenclature of the rifle or revolver, yet they are so closely allied with the working parts of these arms, and with the manner of operating them, that they belong more properly under this head than of any of the other chapters.

By nomenclature is meant the names of the individual screws, bolts, plates, springs, bands, etc., which, when assembled, constitute the complete rifle or revolver.

It is essential that the user of firearms be thoroughly familiar with their mechanical workings, the relation of the different parts, and has a fair knowledge of how to make simple repairs. The first thing to do in acquiring this knowledge is to learn the names of the most common parts.





MILITARY REVOLVER

Fig. 1.

There are so many different kinds and makes of firearms that should it be attempted to give the nomenclature of all of them, an entire volume devoted to that particular task would be inadequate in size. It is deemed sufficient for the present purpose to give the names of the external parts of the present military rifle and revolver, as they embrace many of the parts common to all rifles and revolvers.

For names of working parts of Springfield rifle, model 1903 (the Army rifle), see Appendix I.

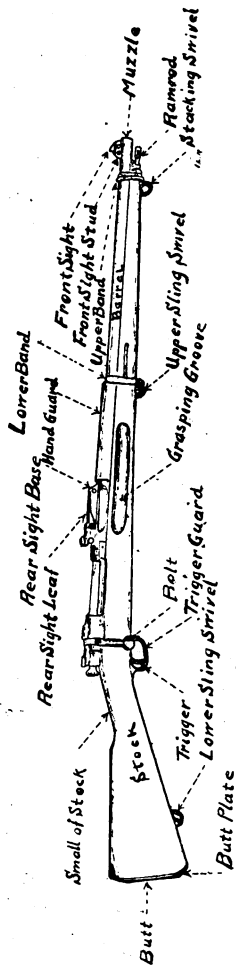
The purchaser of a firearm may obtain from the manufacturers at the time of purchase a complete description of that weapon, which usually gives drawings showing the interior workings.

### *Nomenclature of the Rifle.*

Figure 2 shows a Model 1903 Springfield Rifle, the arm now issued to the Army and the Organized Militia. The names of the parts here given together with the definitions are a part of the rifle range vocabulary, and unless they are understood, half of the talk on the range would not be comprehended.

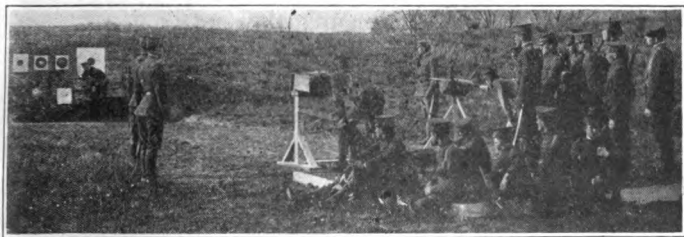
### *Nomenclature of the Revolver.*

The nomenclature of the revolver is in a way similar to that of the rifle, some of the parts bearing different names. The revolver here shown (Fig. 1) is a military model revolver, somewhat similar to that issued to



*Nomenclature of the Springfield Rifle Model 1903*  
*Fig. 2.*

the Army and the Organized Militia. For description of Colt's Automatic Pistol, recently adopted as a hand arm for use by our military forces, see Appendix I.



**Fig. 3.**

Teaching Beginners the Use of the Sights.

## DEFINITIONS.

## AIMING DEVICE:

A device to be attached to the rifle by which the instructor, standing on one side and facing the rear sight on the rifle, when the rifleman is in the act of firing, can see the reflection of both sights and the object aimed at, and can therefore judge of the accuracy of the firer's aim and the steadiness of the trigger squeeze.

## ANEMOMETER:

An instrument for measuring the velocity of the wind.

## ARM:

A firearm weapon of any kind. The term is used interchangeably on the rifle range with "piece," "gun," and "rifle"; as, "Where are the *arms* kept?" and, "With what *arm* is he shooting?"

## BADGE:

See *Insignia*.

## BALL CARTRIDGE:

A cartridge case with bullet, powder, and primer.

## BATTLE SIGHT:

The position of the rear sight in which the leaf is laid down. With the Model 1903 Springfield Rifle (U. S. Army rifle) and sight, this position corresponds to a range of 530 yards. With the battle sight with this rifle the flight of the bullet is at no point



more than two feet above the line of sight, and the dangerous space is continuous for a target of that height above the line of sight.

**BLANK CARTRIDGE:**

A cartridge case with powder and primer only.

**BORE:**

The cylindrical cavity in the small-arms barrel.

**BULL'S-EYE:**

The black circular division in the center of the bull's-eye target.

**BUTT:**

The embankment or other means used to stop bullets in rear of the targets. The plural "butts" is used to designate collectively the parapet, pit, and back stop of a group of targets. When applied to the rifle, it means that part of the stock placed against the shoulder in firing.

**CALIBER:**

The interior diameter of the small-arms barrel, measured between the lands. The caliber of the United States magazine rifle is 0.30 inch; that of the revolver, 0.38 inch; that of the automatic pistol, 0.45 inch. It is expressed as "thirty," "thirty-eight," etc. When caliber is expressed as a hyphenated word, as .45-70, the last figures mean the number of grains of powder in the cartridge the caliber of which is expressed by the first

figures; thus, .45-70 means a forty-five caliber cartridge with seventy grains of powder.

**CANT:**

To revolve the barrel of the firearm on its longitudinal axis while in the act of aiming and firing, thus throwing the top of the barrel to the right or left, instead of retaining it in its proper position of being uppermost. (See Figs. 31 and 33.)

**CENTER:**

The annular division of the bull's-eye targets A, B, and C (see chapter on Targets) embraced between the bull's-eye and the circumference of the next larger circular division of the target. Shots in this space have a value of 4.

**CHARGE:**

The quantity of powder, or powder and bullet or shot, used, or proper to be used, in loading a rifle, revolver, or other firearm.

**CLASSIFICATION:**

The arranging of the individuals of an organization in groups according to the degree of skill displayed in record practice on the range with the rifle or revolver.

**CLIP FIRE:**

Fire executed in same manner as *fire at will*, except that each man, after having exhausted the cartridges in his magazine, suspends firing without command.

**COACH :**

A special instructor charged with the duty of giving information to the firer.

**COURSE :**

The system of ranges and the prescribed scores to be fired over them, as laid down in regulations governing shooting for qualification. For example: The marksman's course, the sharpshooter's course, etc.

**DANGER SPACE :**

The sum of the distances in the path of the bullet in which an object of given height would be struck. At the longer ranges only the danger space at the further end of the range is considered.

**DISAPPEARING TARGET :**

A target which is temporarily exposed to view. The time of appearance and disappearance is usually regulated at the target.

**DISTINGUISHED MARKSMAN :**

An officer or soldier who has won three of the authorized medals in department, departmental, division, and army rifle competitions, or a member actually firing on a prize-winning team in the national team match.

**DISK, MARKING :**

A staff with a disk at one end, used by the marker in the pit in signaling the results of the hits on the target.

**DISTINGUISHED REVOLVER SHOT :**

An officer or soldier who has won three of the authorized medals in department, departmental, division, and army competitions.

**“DOPE”:**

Data as to wind, velocity, light, moisture, and other influences affecting the bullet while in flight; also applies to chemicals used in removing metal fouling in high-power rifles.

**DOUBLE ACTION:**

The firing mechanism where the loads are successively discharged by alternately pulling and releasing the trigger, sometimes called self-cocking.

**DRIFT:**

The lateral deviation of the bullet caused by the resistance of the air and the rotation of the bullet on its longer axis.

**DUMMY CARTRIDGE:**

A cartridge made up to represent a ball cartridge, but containing no powder or primer. Dummy cartridges usually have the cartridge case perforated to distinguish them from ball cartridges.

**ECHELON, ORDER IN:**

In the order in echelon the targets or firing-stands are placed one behind another to the right or left and unmasking one another.

**ELEVATION:**

The adjustment of the sights, usually the rear sight, for distance or range.

**EMPLACEMENT:**

The space on the target range allotted for the position of the target.

**ESTIMATING DISTANCE:**

Calculating approximately, by means of

range-finding instruments, by sight or by sound, the distance of an object from the observer. Estimating distance is a factor in determining the qualification of the expert rifleman, sharpshooter, and marksman.

**EXPERT RIFLEMAN:**

The highest qualification with a rifle or revolver. In the U. S. Army to qualify as an expert rifleman the firer must make an average of 90 in five consecutive estimates of distance; a total of twenty-five hits out of fifty shots at the various moving, bobbing, and disappearing silhouette targets, and in addition make the aggregate required to make the sharpshooters' qualification (415 points).

**EXTREME RANGE:**

See *Ranges*.

**FIELD PRACTICE:**

The prescribed firing at targets simulating the appearance of an enemy under conditions approaching those found in war and the application of this class of fire to tactical exercises.

**FIRE AT WILL:**

That class of fire in which, within the restrictions of the command for firing, the individuals deliver their fire independently of the commander and of each other. It is the class of fire normally employed in attack or defense. Each man carefully loads, aims, and fires until ordered to suspend or cease firing.

**FIRE CONTROL:**

The exercise by a commander, over the units under him, of that power which enables him to regulate the fire in obedience to his will.

**FLINCHING:**

The unconscious shrinking of the muscles employed in shooting, at the time of discharge, or expected discharge, of the firearm.

**FOULING:**

The dirtying of the bore of the firearm with burnt powder, or residue remaining after firing one or more shots.

**GALLERY:**

A room equipped with targets, target carriers, etc., for practice with firearms. Outdoors it is called a "range," or rifle, pistol, or revolver range.

**GALLERY, AMUSEMENT:**

A shooting gallery operated in some public place, with stationary and moving targets of metal, and of various designs, at which the public is permitted to shoot on payment of a stipulated price per shot.

**GALLERY PRACTICE:**

Firing at reduced targets at short ranges, usually indoors, with small-caliber rifles.

**GALLERY, SHOOTING:**

A room or enclosure in which gallery practice may be conducted.

**GROOVES:**

The spiral channels within the bore of the rifle.

**GUN:**

A firearm of any kind. Used as, "You are canting your *gun*," "Remove the loads from your *gun*," etc. See *Arm and Piece*.

**GUN-SHYNESS:**

Fear of the noise or recoil of a firearm.

**INDIVIDUAL PRACTICE:**

The firing on the range by which the individual soldier receives his instruction and by which his classification is determined.

**INITIAL VELOCITY:**

The velocity given a bullet by the explosion of the powder, measured at the instant it leaves the muzzle. It is measured and expressed by the number of feet it would move in one second of time should it continue to move for that length of time without diminishing its speed.

**INNER:**

The annular division of the bull's-eye targets A, B, and C (see chapter on "Targets") outside the center. Shots in this space have a value of 3.

**INSIGNIA:**

A badge or distinguishing mark given as an emblem, indicating the degree of expertness with rifle or revolver.

**INSTRUCTION PRACTICE:**

The prescribed firing on the range which precedes record practice and which is devoted to the instruction of the individual.

**KEY HOLE:**

A hole in the target made by a bullet passing through it sidewise.

**LANDS:**

Spaces in the bore of the rifle between the grooves.

**LONG RANGE:**

See *Ranges*.

**MARKSMAN:**

The lowest of the three qualifications with a rifle for which insignia is issued. In the United States Army an average of 80 out of five consecutive estimates of distances, and a total of 200 points in the record firing, is required for qualification as marksman.

**MID RANGE:**

See *Ranges*.

**MIRAGE:**

A condition of the atmosphere on a rifle range producing the optical illusion of seeing the target at a point not its actual location.

**O'CLOCK:**

A term employed to indicate, by means of the divisions on the dial-face of a clock or watch, the location of a hit on the target, or the direction from which the wind may be blowing, as a 7 o'clock or 4 o'clock wind. In speaking of the position of a hit on the target, it is located by placing an imaginary clock dial over the face of the target with the 12 o'clock at the top, and hits are then designated as 2 o'clock 4, or 1 o'clock 3, or



6 o'clock 2, etc. In speaking of the wind, the dial is supposed to lie flat on the surface of the range with the 12 o'clock at the targets.

**OFF-HAND:**

Firing from the standing position without any artificial support. The use of the gun-sling in connection with the arms is not considered artificial support.

**OPEN SIGHT:**

Sights having no covering, and which are either posts or open notches.

**OUTER:**

The space on the bull's-eye targets A, B, and C (see chapter on "Targets") outside the *inner*. Shots in this space have the value of 2.

**PARAPET:**

An elevation of earth or other material thrown up in front of the targets to protect the markers.

**PEEP SIGHT:**

A sight in which the line of vision passes through a round hole in the rear sight or front sight or both.

**PIECE:**

A rifle or other firearm. See *Gun*.

**PIN-WHEEL:**

A shot that hits the exact center of the bull's-eye.

**PISTOL:**

A small firearm intended for use with one hand. Recent usage makes a very definite

distinction between the pistol and revolver. The term *pistol* is applied to firearms used with one hand where the cartridges enter the cartridge chamber successively, either by hand, as in the case of a single-shot pistol, or mechanically, as in the automatic pistol. The term *revolver* is applied strictly to a one-hand weapon having a revolving cylinder containing the loads, and the term *pistol* to a one-hand weapon where the loads all enter the same chamber before being discharged.

PIT:

The space between the parapet and the butt, or bullet stop, occupied by the markers.

“POINT”:

The smallest graduation on the wind gauge.

POINT-BLANK RANGE:

The distance a firearm will throw a bullet before gravity and the resistance of the air causes it to show an appreciable deviation from a straight line. The distance at which no sight adjustment is necessary for elevation.

POSSIBLE:

The greatest count possible to be made in firing a given number of shots, for example: The “possible” in firing a single score of five shots at target “A” is 25, for the bull’s-eye counts 5, and five bull’s-eyes would be the highest possible count.

PRACTICE SEASON:

Those portions of the year devoted to

firing with the service cartridge. It includes the regular season and the supplementary season.

**PRELIMINARY PRACTICE:**

The prescribed firing on the range which precedes the competitions.

**PRONE:**

Lying flat on the belly. The only firing position with the body extended on the ground authorized in known distance firing in competitions and for qualification.

**PROTEST:**

A formal objection against some action or decision relating to the firing.

**QUALIFICATION:**

The grade, or classification, attained in firing a prescribed course in record practice.

**RANGE:**

Any tract of land over which firing with small-arms is conducted. The term *range* is also used to signify the distance of the object fired at from the firer.

**RANGES:**

Ranges are classified for battle exercises as follows:

0 to 200 yards, close range.

600 to 1200 yards, effective range.

1200 to 2000 yards, long range.

2000 yards and over, distant range.

In the Firing Regulations the ranges are referred to as follows:

0 to 500 yards, short range.

500 to 800 yards, mid range.

800 to 1200 yards, long range.

1200 yards and over, extreme range.

#### **RANGE OFFICER:**

A commissioned officer charged with the care, police, etc., of the targets and range at any fort or post. In competitions range officers also supervise the firing and scoring and enforce the rules of the competition and of the rifle range.

#### **RAPID FIRE:**

The firing in which the aiming and discharging are rapidly performed, and in which a score must be fired within an allotted time, expressed in seconds. With the rifle rapid fire is usually five shots within a time limit of 30 or 20 seconds. With the revolver the allotted time is 15, 10 or 8 seconds for a score of five shots. Time begins with the first appearance of the target and ends with its disappearance. If the target is not of the disappearing kind, then the time is taken at the firing-point, and is computed from the first sound of the command, "Commence firing," to the last sound of the command, "Cease firing."

#### **RECORD PRACTICE:**

The prescribed firing on the range, following the instruction practice, by which the classification of the firer is determined.

**REGULAR SEASON :**

Comprises three months, not necessarily consecutive, of the target year, selected by the department commander, in which the prescribed course of known distance and field firing is pursued.

**RICOCHET SHOT :**

A shot where the bullet strikes the ground or other object and is thereby deflected from its original course. In military shooting hits on the target from ricochet shots have the same value as regular hits.

**SCORE :**

Groups of five consecutive shots (exclusive of sighting shots) fired in individual practice or in competitions. The term *score* is also used to express the result of any series of shots, as the result of a skirmish run.

**SCORE CARDS :**

Blank forms, usually on cardboard, issued to firers for the purpose of keeping a record of their hits. In military competitions these cards give the number of the target a competitor is to fire on, his order of firing, and contain blank spaces for recording his shots, and for the signature of the person keeping the score.

**SHARPSHOOTER :**

The next highest qualification to be attained with the rifle or revolver. The sharpshooter's qualification is higher than a *marksman* and lower than an *expert rifleman*. In the

United States Army an average of 85 in five consecutive estimates of distance, a total of 90 points in the record practice, sharpshooter's course, and an aggregate in record practice, marksman's and sharpshooter's course of 415 points, is required for qualification as sharpshooter with the rifle.

**SHORT RANGE:**

See *Ranges*.

**SHOT-MARKS:**

Disks of thin material, usually cardboard, 3 inches, 5 inches, and 10 inches in diameter, for use at 200 and 300, 500 and 600, 800 and 1000 yards, respectively, for indicating the location of hits on a target. The disks have wire projections attached near the center at a small angle with the face of the disk. The wire projections are passed through the bullet-hole in the target. Disks are white on one side and black on the other; a hit in the white of the target is shown by placing the shot-marker over the hit with the black surface toward the firer. The location of the hit is then seen at the firing-point and the firer can make sight adjustments to meet the error, if any. Hits in the black, or bull's-eye, are shown by exposing the white face of the disk to the firer.

**SIGHTERS:**

See *Sighting Shots*.

**SIGHTING SHOTS:**

The trial shots required, or permitted, to precede the record firing. In military firing

the trial, or sighting, shots must precede the firing for record in firing the first score at 500, 600, 800, and 1000 yards. They form no part of the score.

**SIMULATE FIRE:**

That class of firing in which the loadings and firings are simulated only, no blank, ball, or dummy cartridges being used.

**SKIRMISHER:**

A person participating in skirmish fire.

**SKIRMISH FIRE:**

A form of military firing in which the advance of a firing line in battle is simulated. In this firing each soldier has a disappearing target assigned to him, and the line of skirmishers is then advanced, usually beginning at 600 yards from the target. At stated distances and periods of time the line is halted and firing begins on the appearance of the targets. The total of the values of the hits made in the advance constitutes the soldier's score in his "skirmish run," and is usually included in his aggregate required in qualification.

**SKIRMISH RUN:**

One advance of the skirmisher or squad on the skirmish targets.

**SLOW FIRE:**

Firing in which the aiming and discharging of the piece is deliberate. It is usually one minute per shot.

**SMALL-ARMS:**

Firearms that can be carried, such as rifles, carbines, pistols, revolvers, etc.

**SPECIAL COURSES:**

Special courses are courses provided for troops stationed at posts where range facilities are limited. They are known as special courses "A," "B," and "C." Special course "A" is a course in rifle-firing provided for posts where a complete rifle range is not available, but where a range of 200 and 300 yards can be had. Special course "B" is a course for posts where no range can be obtained. It has a range of but 50 feet and the firing is done on miniature targets. Special course "C" is a course prescribed for the Organized Militia (National Guard).

**SPOTTER:**

One who, in team practice, announces the value of shots and indicates on a wooden target, by means of pins, the position of hits on the range target.

**S.S.:**

Abbreviation for sighting shot; 1 s.s. means first sighting shot; 2 s.s., second sighting shot.

**SUPPLEMENTARY SEASON:**

A period of the target year, selected by the post commander, as nearly midway between the regular annual seasons as practicable, in which all recruits who have joined too late to participate in the regular practice season will fire.



**TARGET:**

An object presenting a mark to be fired at. (See chapter on "Targets.")

**TEAM CAPTAIN:**

The official responsible for the instruction, organization, and discipline of a rifle or revolver team.

**TELESCOPIC SIGHTS:**

A telescope or other device attached to the barrel of the firearm so as to enlarge the objective when aiming.

**TIMED FIRE:**

Timed fire is that class of fire in which the time limit is less than that of slow fire and more than that of rapid fire. With the revolver it is usually 20 or 30 seconds for each score of five shots, time taken from the first appearance of the target to its last appearance in descending. If disappearing target is not used, time is taken at the firing-point from the first sound of the command, "Commence firing," until the last sound of the command, "Cease firing."

**TRAJECTORY:**

The path described by a bullet moving under the influence of the projectile force, the force of gravity, and the resistance of the air.

**TWIST:**

The spiral formed by the grooves in the barrel of a rifled piece. In the United States Magazine rifle, model 1903, this twist is uniform, one turn in 10 inches. In the military

revolver, caliber .38, the twist is one turn in 16 inches.

#### UNQUALIFIED:

All who have not classified as marksman or better, in the last practice season, and all recruits who have joined since the practice season closed.

#### VOLLEY FIRE:

That class of fire in which the individuals constituting a command fire simultaneously at the command of the leader. It has limited application. It is sometimes used for ranging—that is, for estimating the distance by noting the disturbance caused by the strike of the bullets.

#### WINDAGE:

The influence of the wind in deflecting the bullet from the point at which it is aimed, also applies to the amount of change made on the wind-gauge.

#### WIND-GAUGE:

An attachment to the rear sight of a rifle having a graduated scale to be used in lateral adjustments of the sight. These adjustments are made to overcome the lateral influence of the wind on the bullet during its flight. The amount of the change made in adjusting the wind-gauge is called windage; as, "Two points windage to the left." It is also used in setting a rifle's sights at their true "zero." See *Zero*.

**ZERO :**

The correct setting of the wind-gauge for accurate shooting at any range when allowance for wind is not necessary. The "zero" is not the same in all rifles of the same model and having the same sights. It is also used to indicate both lateral and vertical adjustments of the rear sight for any range where no allowances are made for wind, light, etc.

## CHAPTER III.

## FIRING POSITIONS AND PHYSICAL EXERCISES.

*Firing Positions.*

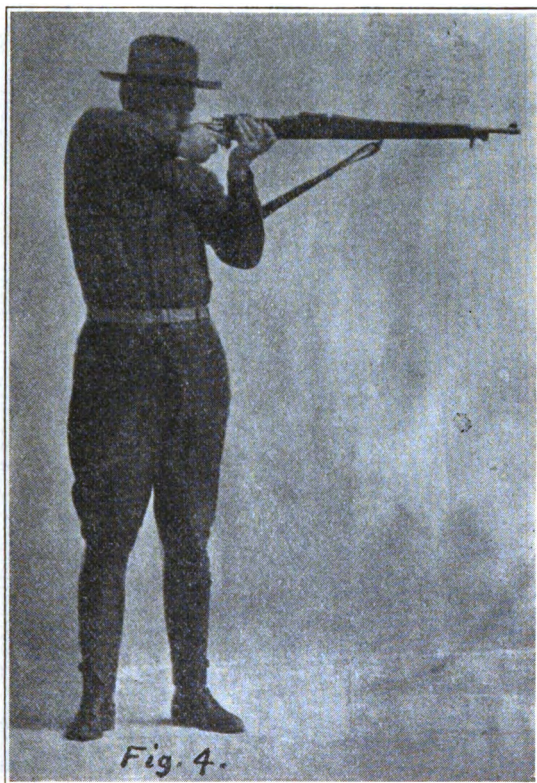
By firing position is meant the manner of placing the body and the firearm, with reference to the target, during the process of aiming and firing.

There are but four of these positions used in firing the rifle, free from any artificial rest, viz.: standing, kneeling, sitting, and lying down, or prone. An artificial rest is not considered legitimate shooting, excepting in making tests, so will not be discussed here.

*Standing Position.*

The standing position is known as the "off-hand" position. (See Figs. 4 and 5.) The military standing position is not only one of stability, but is a graceful and sturdy pose. It is taken as follows:

Face the object to be fired at; make a half-face to the right—that is, turn the body on the left heel until you face an object 45 degrees to the right of the target (if you shoot right-handed; otherwise turn in like manner to the left); now plant the right foot so that the heel is 6 inches to the rear and 2 inches to the right of the left heel (see Fig. 4), the feet forming with each other an angle of about 70 degrees; raise the piece (the rifle) with the right hand and drop it into the left

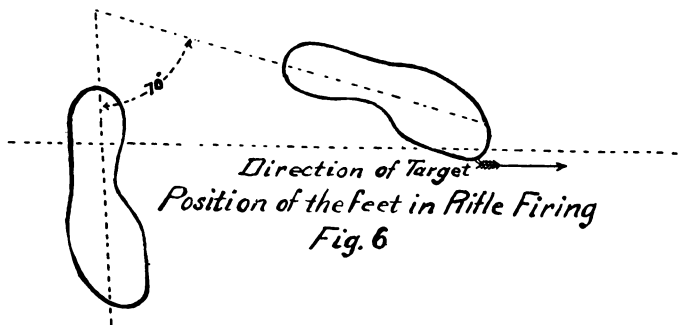


A firing position "standing," or "off-hand," front view. The sling may be used in connection with one arm in any manner the firer may select, with a few exceptions.



A firing position "standing," or "off-hand." The sling may be used in connection with one arm in a number of different ways.

at its center of gravity, left thumb extending along the left side of the stock, the muzzle at the height of the breast; the right hand grasping the small of the stock. Now raise the rifle with both hands and plant the butt firmly against the hollow of the right shoulder, the right thumb resting on top of right side of the small of the stock and pointing toward muzzle, the barrel horizontal with top uppermost, left elbow well under the rifle, right elbow as high as top of right shoulder; incline the head



slightly forward and a little to the right, cheek against the stock, left eye closed, right eye looking through the notch of the rear sight so as to perceive the top of the front sight and the object aimed at, second joint of the fore finger of the right hand resting lightly against the front of the trigger, but not pressing it. (See Fig. 35.)

To the person of average physical make-up the position described is an easy, comfortable one, but some per-

sons are so physically constituted that they cannot take it without constraint of some part of the body. In cases of this kind the shooter should by experimenting discover his most comfortable and natural position, and stick to it. Imitating the positions of expert shots as a general thing is bad practice. A short, fat man cannot assume with comfort to himself a position taken by a tall, lank person. In general, the shooter should adopt the positions most comfortable to him, and which afford the freest use of his firearm as regards holding, sighting, and trigger-pull. Ungainly attitudes should be avoided if possible.

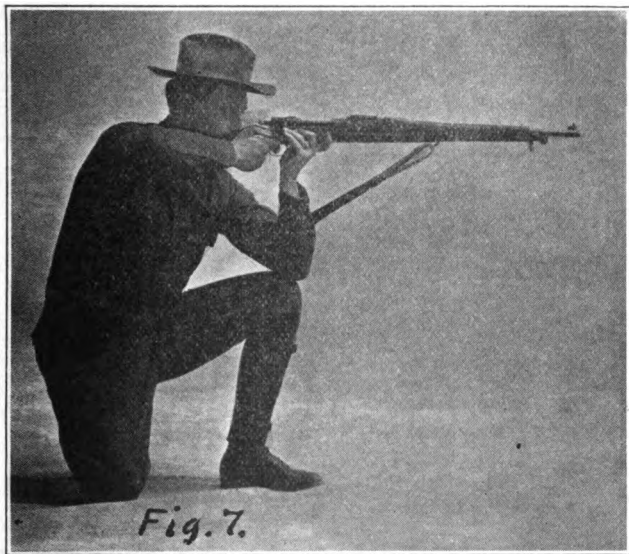
These remarks apply to all positions.

#### *Kneeling Position.*

The kneeling position is a good one for all practical purposes. It is easily and quickly assumed, and is frequently used by skillful hunters. It is also much in use in active warfare, as it quickly diminishes the exposed area of the body and affords a steady hold for a return of fire. It is much less conspicuous than standing, and can be taken from behind cover, such as walls, trees, stone fences, etc.

This position is shown in Figs. 7 and 8. The left elbow should rest in front of the knee-cap, and the right elbow should be even with the top of the right shoulder. The weight of the body should rest on the heel of the right foot, the toes on the ground and the sole of the foot nearly vertical.





A "kneeling position," front view. The sling may be used in connection with one arm in any manner the firer may select, with a few exceptions, such as tying a knot in the sling, disconnecting it from one swivel, etc.



A firing position, "kneeling," back view. The sling may be used in connection with one arm, as noted under Fig. 7. The thumb of the right hand may be extended in the direction of the muzzle, or carried across the small of the stock. The former is preferable.

Sometimes the physical make-up is such that it is at first impossible to sit on the right foot. A little practice will overcome this physical objection, and the shooter will sit almost as comfortably as if in a chair.

*Prone Position.*

The prone, or lying down, position (see Figs. 9 and 10) is the one that affords the steadiest hold. Practice will enable one to hold the rifle in this position approach-



*Fig. 9.*



*Fig. 10.*

ing the steadiness of an artificial rest. At first it is straining to the muscles of the neck, back and arms, but after they have been trained to take this position comfortably, it is possible to fire for long periods without any great fatigue.

The body should lie at an angle of about 35 degrees with the line of fire.

The use of the gun-sling is authorized in this as well as other positions in military contests. Expert shots arrange the sling in such a manner that it prevents the elbows from slipping apart (Fig. 10) and allowing the upper part of the body to come too near the ground.

Some shots are more comfortable when spreading the legs apart, while others prefer to keep them together as shown in the cut.

### *Sitting Position.*

The sitting position may be taken in one of several ways, but care should be exercised that the one adopted is comfortable. The feet may be spread apart, sinking the heels in the ground and resting the elbows on the

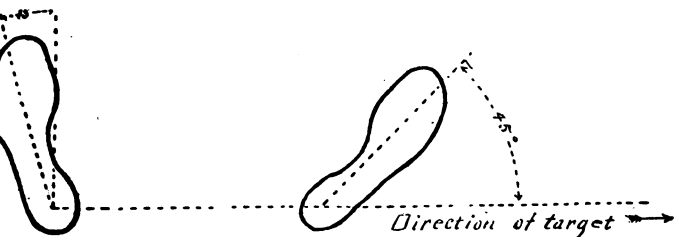


knees. The feet may be crossed and partly under the body as shown in Figure 11.

Another sitting position, which is probably the best if the physical make-up of the shooter is such that he can comfortably take it, is to bring the knees close to the chest, the heels together, the left arm encircling the knees, meeting the right arm with the left hand on the right forearm. The rifle rests on the left forearm. This latter position cannot be taken with any ease, excepting by men with long arms and limber knee-joints.

*Positions in Revolver and Pistol Firing.*

All revolver and pistol contests provide that the arm be held in one hand, free from the body and from artificial support. The matter of the position of the body with reference to the direction of the firing is largely one of individual choice. However, most of the best revolver shots who shoot with the right hand take a position



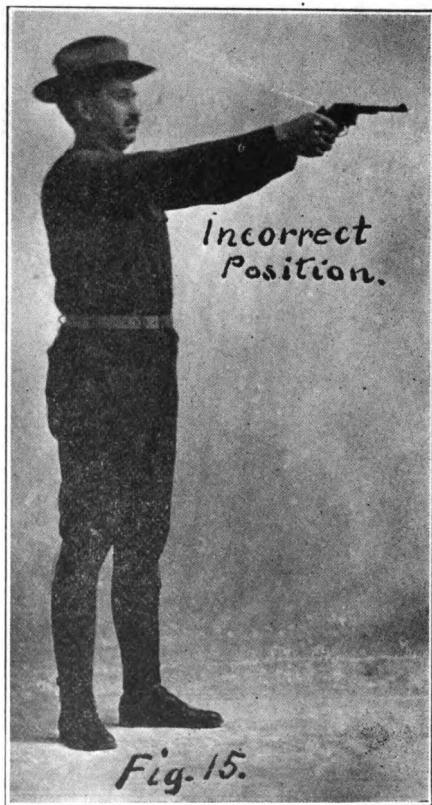
*Position of the feet in Revolver and Pistol Firing*  
*Fig. 12.*



A firing position for revolver or pistol, with position of feet as shown in Fig. 12.

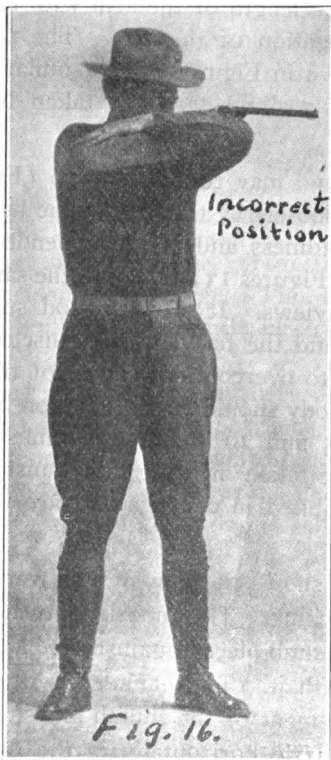


A position for revolver or pistol firing, back view, with feet in position shown in Fig. 12.



**The use of two hands in revolver or pistol shooting is not permitted.**





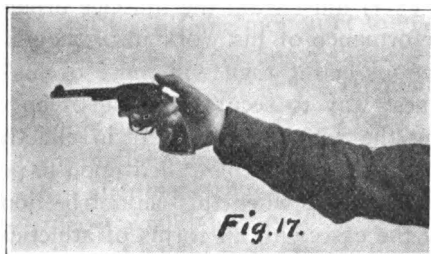
**This position is not permitted in legitimate revolver or pistol shooting.**

with the right side nearest the target, the right hand extended to the full length of the arm with the revolver or pistol in prolongation of the arm. The position of the feet are as shown in Figure 12. A similar position with the left side toward the target is taken by left-handed shooters.

The left hand may rest on the hip (Fig. 13) or the arm may hang loosely by the side. The hand on the hip gives some steadiness and is recommended. The positions shown in Figures 13 and 14 are the same but shown from opposite views. It affords good support for the arm in firing, and the feet and leg muscles in this position are freest to overcome the sway of the body. The weight of the body should rest equally on both feet.

Figures 15 and 16 show intolerable positions and should never be taken in firing either pistol or revolver. They are prohibited in contests and are impractical for any other use.

Figure 17 shows position of revolver or pistol preparatory to cocking. The muzzle is turned toward the right and the thumb placed against the hammer at almost right angles with it. The hammer is drawn back by a backward movement of the thumb and at the same time moving the muzzle horizontally in the direction of the target. This is much better than that of raising the muzzle and drawing back the hammer as it is being lowered. It can be done more rapidly and there is less



danger of the thumb slipping from the hammer and causing an accidental discharge. This manner of cocking keeps the bull's-eye constantly in sight while cocking and firing

Let it be remembered that there are no hard-and-fast rules for taking shooting positions, the violation of which would render it impossible to become a good shot. The illustrations given are those in most common use, and the shooter must decide for himself if they are the best for him.

#### *Physical Exercise.*

Shooting is really a form of athletics. Training the muscles brought into play is just as necessary as for the baseball-pitcher to train to secure control of the ball, or the necessity for a hammer-thrower, shot-putter, runner, pole-vaulter, or other athlete to train to excel in his particular line. Training in any form of athletics consists in intelligent repetition of the same muscular endeavor or effort. So with the rifle or revolver shot; he who

wishes to excel must train the muscles brought into use in the performance of his work until they will perform their functions better than will those of his competitor.

The best way to secure training of any kind is by performing the actual thing itself in exactly the same manner in which one will be called upon to perform during the contest; but when this cannot be done, which is frequently the case with all forms of athletics, and especially so of shooting, then the actual performance must be simulated in the manner that will nearest approach the real thing. In shooting, this simulation can best be secured by taking the various positions and carefully aiming and snapping (pulling the trigger) from them, in the same careful manner which would be practiced in actual competition on the range. This will bring into play all the muscles which would be used in actual firing, and the only thing present in actual firing lacking in the exercises is the noise and recoil. Actual firing should be had at every opportunity, but unfortunately most people are so situated that that is not often convenient; but anybody can take a few minutes' practice every day in aiming and trigger-pulling.

The co-operation of the trigger finger with the vision is a very essential thing in good shooting. Unless the trigger finger works in perfect harmony with the eye the best results cannot be obtained. There is no such thing possible as securing absolute and perfect steadiness in holding without artificial rest, although

some of the best riflemen make a very close approach to it in the prone position. The very best that can be hoped for will still leave some motion at the muzzle, and to make up for this the trigger finger must be trained to work with the eye, and to act at the moment an alignment of the sights on the target is secured.

Careful and deliberate aiming and pulling the trigger with proper alignment should be practiced at every opportunity. Tack round bits of black paper on parts of the wall where the light will fall on them, and practice aiming and snapping at them at every spare moment. Usually in the morning or immediately before or after meals a few moments can be spared. It will remove the mind from its other labors, tending to give it a rest, and will add greatly to your ability to hold, sight, and pull correctly.

Quit when fatigue begins. Overdoing anything is injurious, and this is particularly true of shooting.

The muscles of the trigger finger should have careful training. This should not only be in the direction of their co-operation with the eye, but with reference to the development of their strength. This is sometimes done by using a double-action revolver of heavy trigger pull, and snapping repeatedly, using the double action.

## CHAPTER IV.

## SIGHTING, TRIGGER-PULL, AND HOLDING.

The fundamental principles of all shooting with hand arms are: first, that the sights must be properly aligned upon the object to be hit; second, the trigger must be pulled in such a manner as will not disturb the alignment of the sights; and third, the firearm must be firmly and uniformly held at time of discharging.

Many people secure the proper sight alignment, but destroy it in the act of discharging the gun, either by faulty holding or trigger-pull. The art of combining the proper sighting, holding, and trigger-pull must be thoroughly acquired. After this has been accomplished, such things as sight adjustments for light, windage, weather conditions, and distance will come with practice in actual firing on the rifle or revolver range.

*Sights and Sighting.*

There are countless varieties of sights. All are on the same principle, and the matter of choice, when not restricted by the rules of a match or competition, rests with the individual requirements of the user. It is advisable that the simpler form of sights be used, for they are the most common, and the only ones which would stand varying weather conditions encountered on extended hunting trips or in active military service.



Sighting a revolver.

How a famous shot stands  
and aims his revolver.

Fig. 18.

The military sight, which is considered by many best for all practical purposes, consists of a plain front sight of fixed height, and a rear sight with vertical and lateral adjustments. The vertical adjustment is for distance and the lateral for wind allowance and correction for the drift of the bullet.

The military revolver sights are not adjustable for either the front or rear.

Very few competitions of any kind allow the rear sight to be in rear of the firing-pin.

It should be understood that few guns as they come from the factory are accurately sighted. It must not be understood from this statement that they are carelessly sighted, or that the error in the sights is great. The average shooter would probably not detect the slight misplacement in the original setting of them. To secure an absolutely accurate setting of the sights the gun must be ordered "sighted" at the time of purchase from the factory, when it will be thoroughly tested by an expert before it is shipped out. Even this is not always satisfactory, as the expert's manner of sighting or holding may differ from yours, and the same results may not be obtained by you.

Firearms have their individuality the same as people. It is not likely that any two guns made by the same workman in the same factory, using the same patterns, jigs, templets and dies, and the same machinery, would shoot alike. Sights are placed on a particular model of



firearm to meet the conditions of the average tests of that model as shown by firing many shots from different arms of that make. For this reason individual arms of this model may slightly stray from the path marked out for them by the sights which are fitted to them, hence the error. As all sights are subject to some adjustment, even if necessary to use a file, any niceties in adjustment desired can be made when a thorough knowledge of the eccentricities and shooting qualities of the gun has been obtained by testing out on the range.

The path of the bullet is never identical with that of the line of sight. The line of sight is a straight line, always; the path of the bullet, called the trajectory, is a curved line; for gravity, resistance of the air, and varying atmospheric conditions begin to act on the bullet the moment it leaves the muzzle and tend to draw it toward the earth, (with some influences, such as wind, tending to drive it laterally from its course.

These influences are overcome, within the carrying power of the firearm, by the adjustment of the sights.

If a bullet once upon its course would move forever in a straight line, immune from all influences, it is plain that no sight adjustment would be necessary, for the same sights would answer for all distances from the muzzle to the limit of human vision; but this ideal arrangement cannot be accomplished nor even approached, so we must learn how to overcome the influences affecting the flight of the bullet.

Before discussing the accompanying figures illustrating the uses of the sights, bear in mind the following:

THE BULLET MOVES IN THE DIRECTION OF THE ADJUSTMENT MADE ON THE REAR SIGHT. That is, if you raise the elevation of the rear sight, the bullet will rise and carry farther; move the rear sight to the right and the bullet will carry to the right; and the same to the left, etc. This being the case, it is evident that the movement of the bullet will be contrary to the adjustment of the front sight.

By means of the graduated scale, usually on the rear sight, any adjustments for increased distance or lateral movement can be accurately measured. Even at the extreme ranges, both vertical and lateral adjustments can be made by means of these gradations on the sights for a deviation much less than the width of the bull's-eye.

A rifle equipped with proper sights in the hands of an experienced marksman can be made to respond to the highest degree of accuracy, being limited only by the errors of judgment, vision, and muscular training of the shooter, and the mechanical deficiency of the ammunition and the bore of the firearm; the latter can be partly overcome when the shooter is familiar with the rifle he is firing.

All sightings may be classed under three general heads, viz.: Fine Sight, Half Sight, and Full Sight. These are illustrated in the accompanying figures. In

these cuts the solid black space represents the rear sight; the front sight is a black post or standard appearing within the groove or "U" of the rear sight, and the target is shown in perspective with the bull's-eye just above the front sight.

Sighting should not be *at* a bull's-eye, but immediately *under* it, allowing a thin white space to appear between the top of the front sight and the bottom of the bull's-eye. Some marksmen prefer to have the bull's-eye "set on top of front sight," without the thin strip of white showing.

### *Fine Sight.*

When in sighting just the very tip of the front sight appears within the "U" or groove of the rear sight, and in alignment with the target, it is called a *fine sight*. (See Fig. 19.)

This form of sighting has some advantages, the principal of which is that it insures a more uniform amount of the front sight seen in each of many successive shots. In the other forms of sighting there is a less accurate gauge of the amount of the front sight seen ("taken in"), unless there be some detraction of the eye and mind from the bull's-eye where they should largely rest during the process of aiming.

The disadvantage is that it is more trying on the eyes, requiring a great deal more visual exertion than sighting where more of the front sight is seen. This exertion of the eye will soon cause the bull's-eye to blur

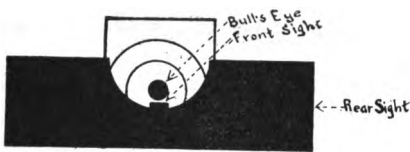


Fig. 19. Fine Sight

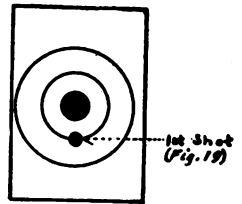


Fig. 20.

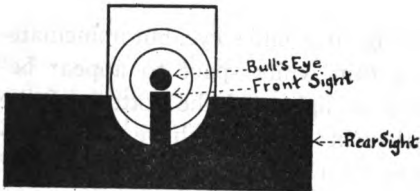


Fig. 21. Half Sight

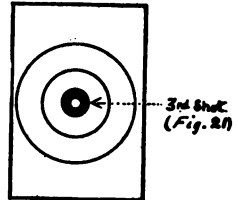


Fig. 22.

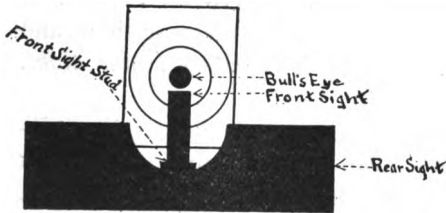


Fig. 23. Full Sight

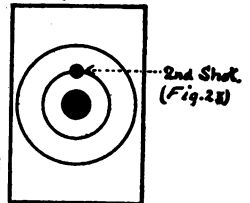


Fig. 24.

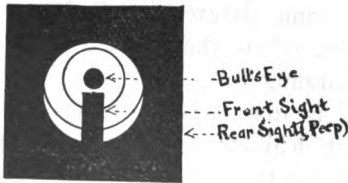


Fig. 25. "Peep" Sight

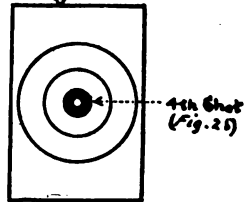


Fig. 26.

Forms of sighting and resultant hits on the target.

and the sights will become hazy, unless the shooter is blessed with exceptionally strong eyesight.

### *Half Sight.*

The half sight is that position of the front sight in sighting where its top is on a level with the top of the groove of the rear sight (see Fig. 21), or on a level with the center of a "peep sight."

This manner of sighting is recommended by most of the best rifle shots. It is less trying on the eyes than the fine sight. Most rifles as they come from the factory are sighted to be shot with the half sight.

When first taking up this form of sighting the eyes will be taken from the target, where they should rest, to the sights in an effort to secure the level position of the top of the front sight with the "U," or "peep," of the rear sight, but practice will enable the shooter to secure this relation of the two sights mechanically.

Should a rifle have its sights adjusted for shooting the half sight, the result of shooting the fine sight would be as shown in Figure 20, the accompanying figure to 19. As shown, the hit would be too low, and would appear under the bull's-eye. Figure 22, the accompanying figure to 21, shows the placing of the shot in the center of the bull's-eye, as would be its correct location in firing from a rifle sighted for the half sight.

### *Full Sight.*

The full sight is that position of the front sight dur-

ing the process of aligning the sights on the target where the entire post of the front sight down to the "stud," or base, appears in the groove, or "peep," of the rear sight. (See Fig. 23.)

This kind of sighting is not recommended, excepting in cases where the eyes are very poor.

A shot fired from a rifle sighted for use of the half sight where the full sight has been taken would result in a hit above the bull's-eye as shown in Figure 24.

From the above it will be seen that the more of the front sight seen within the "U" of the rear sight the higher the hit on the target; and, conversely, the less of the front sight seen the lower the hit.

### *Peep Sight.*

The "peep sight" is shown in Fig. 25. This consists in seeing the target through a hole in a plate or disk attached to the rear sight instead of looking through the "U" in an open sight as in the former cases. This is a popular manner of sighting. The top of the front sight should be brought in its alignment with the target to the center of the hole, or "peep." The "peep" is used by practically all expert riflemen wherever its use is permitted.

### *The Eyes.*

It is not necessary that aiming be done with one eye. Many marksmen use both eyes. At first this appears awkward, and the target is not distinct. With some

people there appears to be two targets and two sets of sights. With practice these troubles may be overcome by the person with normal eyes.

The pistol and revolver may be sighted with either eye, or with both eyes. The right-handed shooter will find it necessary to carry the revolver or pistol farther toward the left in using the left eye, and the left-handed shooter will be required to carry the pistol arm toward the right. The tendency to cant is somewhat increased by using the opposite eye.

The eyes should be fixed on the point aimed at, and not on the sights. If the eyes are on the sights, the target will blur. The sights will blur when the eye is on the target, but the blur of the sights is much nearer the eye than the target and offers less difficulties in correct aiming.)

It is physically impossible to focus the eye on two different objects, one of them near and the other at a distance, at the same time, and have both appear distinct in outline. The impossibility to do this has caused many beginners to think they have defective vision, and they have become discouraged in consequence.

### *Faulty Sighting.*

In all the above illustrations (Figs. 19, 21, 23, and 25) the front sight appears in the center of the opening in the rear sight, which is correct as far as lateral appearance of the front sight is concerned. Some erro-

neous forms of sighting, and the consequent failure to deliver the bullet at the point aimed at, are shown in Figs. 27, 28, 29, and 30. In Figure 27 is shown the half sight with the front sight the proper distance under the bull's-eye, but by reference to Figure 28 it will be seen the bullet arrived at a point to the right of the bull's-eye. This error is caused by not having the front sight appear in the center of the rear sight, but to the right of the center. The same kind of error, but to the left, is shown in Figure 29 and its accompanying Figure 30. These are common forms of error and are easily avoided.

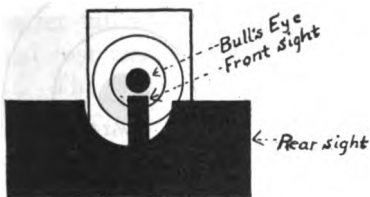
### *Trigger-Pull.*

The trigger-pull is very closely related to sighting, or aiming. Absolutely perfect aiming would avail nothing if the firearm is not discharged when an alignment has been secured. The finger must be trained to act with the eye, so that at the instant of the accomplishment of an alignment of the sights with the point aimed at the piece will be discharged. This cannot be done without a great deal of practice. An increasing pressure must be brought to bear on the trigger by the trigger finger while the eye is attending to the alignment, and this pressure must be brought to the point where the very slightest additional pressure is necessary to drop the hammer when this alignment has been secured.

There is probably more in the harmonious working of the finger and eye in shooting than there is in steady

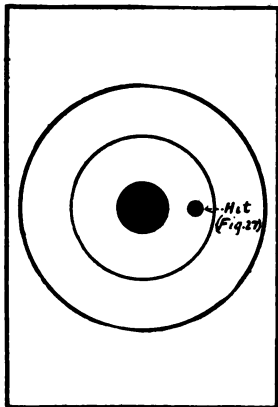


# *Incorrect Aiming*

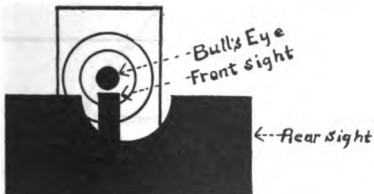


*Fig.27.*

*Front sight to right  
of center of rear sight*

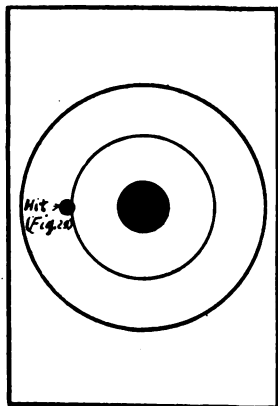


*Fig.28.*



*Fig.29.*

*Front sight to left of  
center of rear sight*



*Fig.30.*

**Erroneous sighting and resultant hits on the target.**

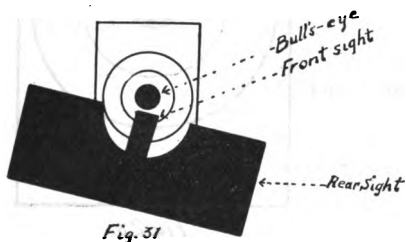


Fig. 31.

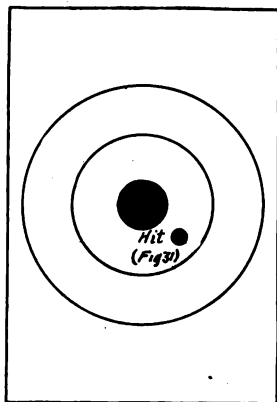


Fig. 32.

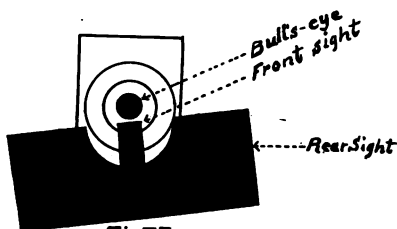


Fig. 33.

*Canting and results*

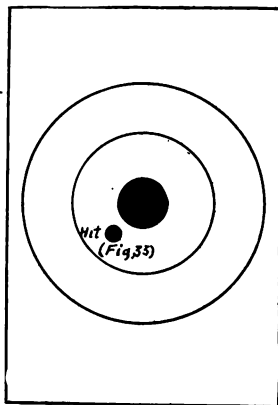


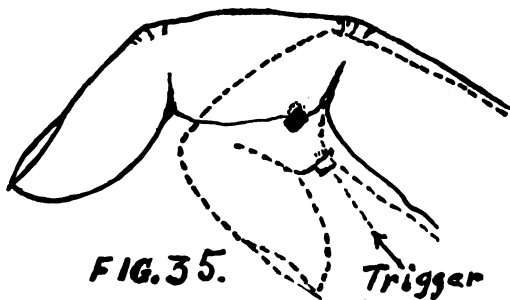
Fig. 34.

Canting the rifle while firing and the result as shown on the target.  
(See page 72.)

holding. It must be apparent that this final pressure necessary to discharge the firearm must be so slight that no jerk or movement due to the final application of pressure will be transmitted to the gun. The hammer must be let fall as if it had been moving at a slow pace and had just reached the firing-pin at the moment of firing.

The longer the range the greater the error due to improper pulling of the trigger; for any misplacement of the muzzle produces error, increasing with the distance.

The first finger of the right hand for the right-hand shooter and the corresponding finger of the left hand



for the left-hand shooter are the proper trigger fingers. There are some of the best shots who use the second finger, but they are exceptions.

Where the hand is large enough the trigger should rest near the second bend in the finger. (See Fig. 35.) By pulling the trigger in the manner shown the movements of the muscles have a tendency to pull toward the

butt, rather than imparting a side movement to the gun.

Sometimes the shape or size of the hand does not permit of pulling the trigger in this manner, in which case it is necessary to place the trigger inside the first bend in the finger. If the hand does not fit the firearm so the trigger may be pulled near the second bend of the first finger, a little experimenting will soon disclose the manner of trigger-pull best suited to the hand.

Endeavor to secure a pull in a direction parallel with the bore of the barrel. Any other pull will have a tendency to displace the sight alignment with the target.

In this connection it should be remembered that in all forms of competitive and qualification shooting the trigger finger is not permitted to be within the trigger guard until targets have appeared or "Commence firing" has been given.

### *Holding.*

By holding is meant the physical effort of placing the gun in its correct alignment with the target as directed by the eye, and retaining this position throughout the processes of sighting, and discharging, or trigger-pull, and until the bullet is on its way free from the influences of powder or gun. The three—sighting, trigger-pull, and holding—constitute the physical efforts in shooting, and these three are subject to improvement by training, just as a baseball-pitcher improves his control by physical training.

The mental processes consist of judging of distances, wind velocity, atmospheric conditions, light, bullet drift, etc., and the adjustment of the sights to meet these influences.

In shooting a great deal depends on head-work. The development along this line will depend largely on the adaptability and aptitude of the shooter to the game of shooting.

In holding it must be borne in mind that there is some recoil (kick) to all firearms at the time of discharge, and in some of them it is enough to inflict more or less punishment to the person firing. The gun must be so held as to reduce the effect of the kick as far as possible for two reasons; which are: first, a firearm improperly held affects the accuracy of the shooting; second, the punishment for one shot may not be great, but repeating it many times, as is necessary when firing with a high-power rifle in a competition, or for qualification or practice, it will soon become painful. When this stage is reached there will be an involuntary shrinking of all that part of the body affected, at the time of pulling the trigger, with the result that there will be absolutely no accuracy in the shooting. This is called "flinching," or "gun-shyness." It is easily acquired and very hard to overcome. For this reason care should be taken that the gun is properly held from the very first,

*Holding the Rifle.*

With the rifle the proper holding consists of planting the butt-end of the rifle squarely against the hollow of the fleshy part, so that the top of the butt will be about level with the top of the shoulder. (See Figs. 4, 5, 7, 8, 9, and 11.) By raising the elbow on a level with the top of the butt, this position can be maintained while firing without any trouble about the rifle slipping from the shoulder. Care should be taken to avoid the planting of the butt against the collar-bone or point of the shoulder, as bruises will soon follow if this is done in shooting a high-power rifle.

With the smaller rifles this is not so important.

The butt should always rest against the fleshy part of the shoulder. The left hand should grasp the rifle firmly, pressing it backward to maintain a firm contact of the shoulder with the butt. The right hand and arm should be required to do nothing but assist in steadying the gun and pulling the trigger, the latter being the first duty.

*Canting in Holding.*

A very common fault is that of "canting." By this term is meant the rotating of the firearm to the right or left on the axis of the bore while in the act of aiming and firing.

The top of the firearm should be uppermost—not leaning toward the right or left in the slightest.

Forms of canting are shown in Figures 31 and 33, and the results on the targets, Figures 32 and 34, page 68. It will be seen that canting to the right has a tendency to lower the elevation and carry to the right (Fig. 32), while the opposite results occur by canting to the left. (Fig. 34.)

Nearly all beginners possess the canting fault. An easy remedy is found in aiming and snapping in a mirror, using the reflection of the muzzle of the firearm as the target. Any cant of the firearm will result in a cant of your target and can be plainly seen. Corrections can be made and the habit soon overcome.

The penalty for canting, which the shooter pays in error on his target, will be seen when it is stated that with a very slight cant the lateral inclination is sufficient to throw the hit out of the bull's-eye at 600 yards and at 1000 yards will carry over to the outer, or 2. (See Fig. 47.)

In this connection it might be said that the mirror exercise is a remedy for other faults, such as tremulousness, movement of the gun by trigger-pull, etc. It will also show the movement transmitted to the muzzle by the impact of the hammer where the holding does not overcome it. It will aid in overcoming "gun-shyness," or "flinching," as the firer will see the results of his in-

voluntary movements, and the ridiculousness of this habit will appear to its fullest extent.

### *Holding the Revolver and Pistol.*

With the revolver or pistol a firm grip must be had, but care must be taken that this grip does not become a squeeze, which will impart the heart pulsations to the muzzle. There is quite a distinction between a firm grip and a hard squeeze; the former will maintain the gun in its aligned position while pulling the trigger, while the latter will impart a regular tremulous motion with an exaggerated motion with each heart-beat.

Revolvers are much lighter in weight, compared with the powder charge used, than rifles, and the recoil is greater in proportion. There is always some "jump," or "kick-up," which must be overcome in the holding.

In many of the cheap revolvers it may be necessary to aim low to overcome this kick-up, but with these same guns it may also be necessary to hold to the right, or left, or any other direction other than at the bull's-eye, in order to approximate a hit.

With practice with a good revolver it is possible to aim at the thing shot at and hit it after the accomplishment of proper holding, sighting, and trigger-pull has been acquired.

In using the double action some excellent revolver shots place the little finger under the butt. (See Fig.

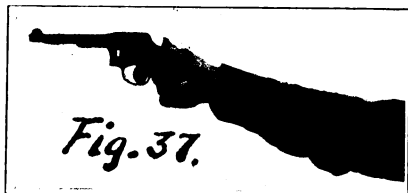


36.) For the single action the grip, or hold, is as shown in Fig. 37. In firing the pistol or revolver many good shots extend the thumb forward as shown in Fig. 38.

The trigger-pull in the double action is much harder



than in the single action, and for this reason the double action is less accurate. By placing the little finger under the butt, or stock, greater leverage is secured in pulling the trigger and the weight to be pulled is less. This



of course would lessen the tendency to disturb the muzzle at the time of firing by pulling the trigger.

The holding must always be uniform in order to get uniform results. Gripping hard one shot and loosely the next shot will get different results on the face of the

target, even though the aiming and trigger-pull in both shots be exactly the same.



Everybody is subject to more or less tremulousness in holding a rifle or revolver, but some to a much greater degree than others. They also have within themselves the power to overcome at least a large part of it. This is done in two ways, viz.: exercise of will-power, and the training of the muscles. When this tremulousness is due to nervousness, it can in time be mastered by the exercise of will-power, concentrating the will while in the act of aiming to the correcting of this fault; when it is due to muscular exertion, it can be remedied by training the muscles to perform the work without strain. The simple matter of holding out the empty hand in prolongation of the arm, a position similar to that assumed in revolver shooting, will soon become very fatiguing, and the hand and arm become unsteady. A regular exercise of this kind will train the muscles brought into play in this performance to do their work with less fatigue, and the condition of unsteadiness will gradually disappear.

So in shooting, the muscles must be trained to hold the rifle or revolver in the required position for a time sufficient to secure a proper alignment of the sights without becoming fatigued. When this has been done, any considerable tremulousness that remains is due to nervousness and must be overcome by exercise of the will-power along with the exercise of the muscles.

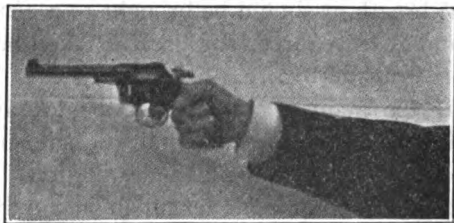
In shooting a long breath is taken into the lungs upon assuming the firing position, and about half of it let out when the eyes begin to find the target and sights, and no breathing then takes place until the shot has been fired.

Should the sight alignment not be satisfactory during a holding of fifteen to twenty-five seconds, and the gun become unsteady because of muscular fatigue and holding the breath, it should be brought to a comfortable position, and at least three long breaths taken before another effort is made to fire.

By far too many shooters trust to luck after they become fatigued in holding, and pull the trigger, hoping the bullet will reach its intended destination. Luck in shooting probably counts for less than in anything else, because of the constant repeating of the same performance, and should never be relied on for results.

In deliberate fire, where the time is not limited, the trigger should never be pulled unless the shooter is satisfied in his own mind the alignment and the holding are the best he is capable of securing.

The matter of habits should be carefully looked after by the ambitious shot. Regular habits with plenty of sleep are necessary. The excessive use of tobacco or intoxicants will be a great hindrance to accuracy. There are some good shots who seem to violate all laws of Nature, but they are exceptions, and there is no telling to what extent their work might be improved if they would live up to the laws required of ordinary mortals in the shooting game.



## CHAPTER V.

## WIND, LIGHT, AND TEMPERATURE.

*Wind.*

A wind is a moving force and has a tendency to carry with it all moving bodies brought within its influence. The movement of wind near the surface of the earth is horizontal, and any force it may transmit to a moving body will be horizontally applied. The fact that a bullet moves with greater velocity than any other moving body with which we are familiar does not make it immune from the effect of the wind. The moment the bullet leaves the muzzle it comes under this influence, and if the wind is constant, its effect is constant during the entire flight of the bullet.

The effect of the ordinary wind on the bullet's course for very short ranges is not appreciable, and especially with a high-power rifle no allowances are made in the sighting to overcome it for distances of less than 100 yards.

The amount of deviation from its true course which the wind may give a bullet depends on four things, viz.: the velocity of the bullet, the distance traveled by the bullet, the velocity of the wind, and the direction from which the wind is blowing with reference to the true line

of flight of the bullet. These will be discussed in the order named.

The time of flight (the time the bullet is in the air from the instant of leaving the muzzle to the instant of striking the object aimed at) is dependent on the velocity of the bullet. The greater the velocity the less the time required for the bullet to travel its course. Wind imposes its influence only during the time of flight; then the less the time of flight the less time the wind will have to exert its influence. The effect of the wind for any range on the flight of a bullet from a high-power rifle is therefore less than it will be on the bullet from a less powerful gun.

The distance the bullet has to travel under the influence of the wind has a marked bearing on its deviation from its true course due to the influence of the wind. For a given rifle and a given ammunition, the greater the distance the greater the time of flight, and the greater the distance from the muzzle the less the velocity of the bullet. A bullet has its greatest velocity at the muzzle (the initial velocity) and moves with a constantly decreasing rate of speed. As the rate of speed decreases the effect of the wind increases. Not only this, but the greater the distance the greater the elevation of the sights necessary to cover the distance, and elevating the sights raises the bullet higher into the air, where the wind freed from the friction of the surface of the earth moves

with greater velocity, and therefore exercises a greater influence.

The higher the velocity of the wind the greater is its power to change the course of any moving body with which it comes in contact. A moving body cast into the wind at right angles with its course and at a rate of speed less than that of the wind will soon be moving with it. The effect the wind may have on any body moving perpendicular to its course would be in proportion to their relative rates of speed.

For a wind to exercise a maximum effect on the flight of a bullet, it must move directly across its course—that is, at right angles with its course. This effect is in a direct lateral direction. As the angle at which the wind crosses the true line of flight of the bullet decreases the lateral influence decreases until the angle of crossing has diminished from 90 degrees to zero, at which time its influence is no longer lateral, but longitudinal.

To better illustrate this idea, let it be imagined that upon the surface of every rifle range, lying back down, is the face of an immense clock, with the XII at the targets and the VI at the firing-point. (See Fig. 39.) A wind blowing from VI to XII is called a “six o'clock wind,” from XII to VI a “twelve o'clock wind,” from III to IX a “three o'clock wind,” from I to VII a “one o'clock wind,” etc.

The wind reaches its greatest longitudinal effect

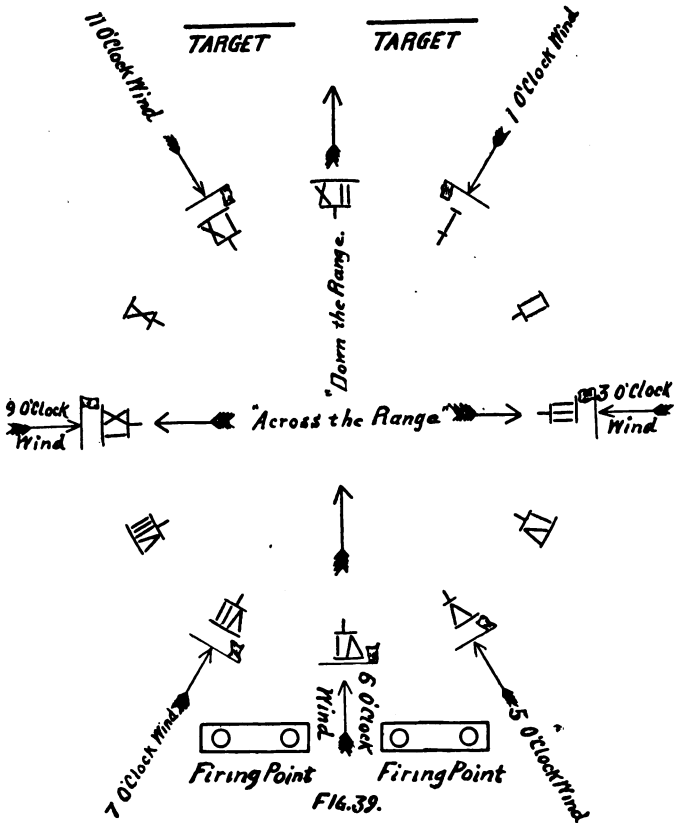


FIG. 39.

Locating wind directions on the rifle range by means of the clock dial system.



when blowing from VI to XII, or from XII to VI, although these effects are entirely opposite.

A six o'clock wind moves with the bullet and adds its force to that given by the exploding powder, and the tendency is to carry the bullet further. Should this effect be sufficient to make it necessary to make any sight adjustments to overcome it, the adjustment would be in the direction of decrease in elevation of the rear sight.

Exactly the opposite effect would come from a wind blowing from XII to VI. This wind would blow into the face of the bullet, and would have a tendency to lessen its velocity and shorten its course for a given sight adjustment. To overcome it the rear sight must be raised sufficiently to counteract this retarding effect.

These longitudinal effects of the wind are not sufficient for short ranges to be taken into consideration. With the high-power rifles this influence is not felt to any appreciable degree under 500 yards.

A lateral wind from III would have a tendency to carry the bullet to the left of the point aimed at, and to overcome it the wind-gauge on the rear sight must be moved to the right. The contrary is true of the IX wind. A wind shifting from either of these directions toward the VI or XII is gradually losing its lateral effect, which is being converted into longitudinal force, and for a given rate of wind the lateral adjustment of the sights

is constantly less as the wind approaches either of these points on the clock.

At the long ranges it may be necessary to make both lateral and longitudinal adjustments of the sights. An XI wind would still have some lateral influence, and is approaching its greatest longitudinal influence, and if the wind is sufficiently strong, increased elevation of the rear sight and left windage on the wind-gauge may be necessary. Or, should the wind blow from VII, less elevation and left windage would be the proper adjustment.

From these principles may be determined the proper adjustments for any direction of the wind.

Few revolvers and pistols have wind-gauge sights, and when firing in wind that is having effect on the true course of the bullet, it is necessary to make allowance by sighting to the right or left, or high or low, as the direction of the wind may require.

There are several different kinds of winds besides the winds of constant direction and velocity. The discussion above has dealt with winds of this kind only. It is not an infrequent occurrence for the wind to be blowing from two different directions at the same time across the path of a bullet, or rapidly shifting from one lateral influence to another. This is called a "fish-tail" wind and is the hardest the rifleman has to contend with. The "puffy" wind is trying, as the shot may be fired during a calm, and a "puff" cross the range immediately afterward, thus catching the marksman off his guard. An

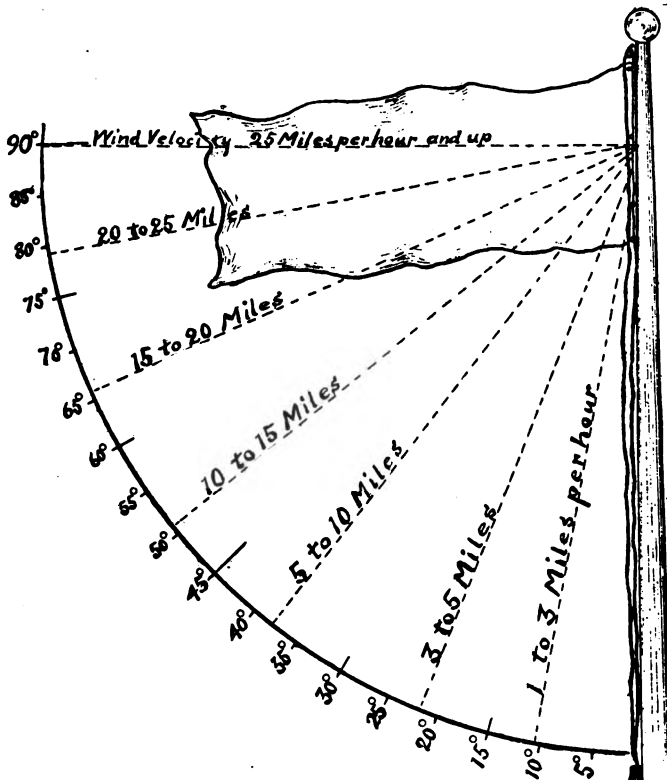
experienced shot soon becomes familiar with many of the tricks of this capricious wind, and can fire his shots at a time when he is fairly certain the bullet will reach its mark before the wind catches it.

The velocity of the wind is sometimes measured by the use of an anemometer, an instrument for measuring the force and velocity of the wind. These instruments are prohibited on most rifle ranges, and the velocity and direction of the wind is left for the individual rifleman to judge for himself. The ability to do this is one of the accomplishments of a good rifleman.

A common way of judging the wind is by the lift of the wind streamer, or a danger flag. This is illustrated in Figure 40. In this figure is shown a range streamer. By the "lift" is meant the angle formed by a line drawn through the flag lengthwise with the flag-staff, or pole. The greater the velocity of the wind the more nearly horizontal the flag will float, and the greater is this angle.

The angles given, showing the velocity of various winds, are at best approximations, as no two flags will float exactly alike. Moisture in the atmosphere, weight of the cloth of the streamer, its length, its width, the tautness of the halyards (ropes for hoisting and lowering), etc., will have effect on the "lift."

These flags, or streamers, are prohibited on many ranges, so other means of ascertaining the velocity must be resorted to. The waving of high grass, movement of



## LIFT OF THE WIND FLAG

Showing the "flag float," or "lift," for different velocities of wind. Flag shown is the standard range flag, on streamer

the leaves on the trees, throwing small scraps of paper into the air are some of the means employed in judging velocity and direction.

Many ranges are equipped with a wind-clock. (See Fig. 41.) This clock gives the direction from which the wind is coming, expressed in terms of the face of the clock.

Tables for windage adjustment of the sights may be had for most military and high-class sporting rifles, but the majority of the best marksmen work out their own table of allowances, and many of them become so expert that they make no reference to tables, but make their sight adjustments from memory.

#### *Light and Temperature.*

Light and temperature are things to be considered in shooting, not so much because of any force they may bring to bear on the bullet in its flight as the influence they exercise in sighting. This is particularly true of light.

On bright, hot days there is always a probability of local air currents caused by the differently heated areas over which the bullet may pass in its flight. There is also the possibility of a portion of the range being in the shade, in which case that particular piece of ground would be cooler and the adjacent air, being of a greater density, would offer increased resistance to the bullet. The air is most likely to be of a uniform density on days when the sky is overcast.

# Wind Clock.

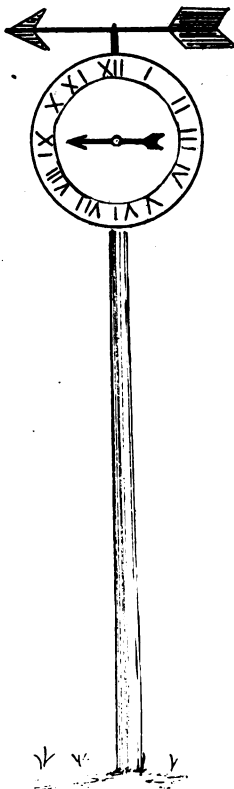


FIG 41.

This clock indicates the direction from which the wind is blowing, expressed in terms of the face of a clock.

When the sun is shining bright to the right or left of the firing-point, the side of the front sight toward the sun will be bright and the top on that side will be brought into greater prominence, and there will be a tendency to bring this into the center of the rear sight. This will have the effect of delivering the bullet to the side of the mark aimed at opposite to that of the sun. That is, a bright sun to the right has a tendency to cause shooting to the left, and the opposite effect for the sun on the left.

Also a bright sun directly over the firing-point will bring the top of the front sight into greater prominence and have a tendency to cause the firer to take in less front sight, causing the shots to fall low. The sun to the right or left may cause a combination of the two errors—that is, low and to the right, or low and to the left.

Changing lights seem to affect people differently. When firing under conditions of changing light, the best plan is to wait, if the conditions of the match permit it, until a uniform light may be had for each shot.

When clouds are passing over the sun, fire when the sun is overcast, and when the cloud has passed wait for another before firing again. This may frequently be done in deliberate fire. When this is not possible, then aim long enough at each shot for the eye to become accustomed to the new, or changed, condition of the light.

The most favorable light conditions may usually be

found on warm, damp days with the sky uniformly overcast, the light being of a dull grey.

The light condition most fatal to good shooting is the existence of a mirage. A mirage is an optical illusion arising from unequal refraction in the lower strata of the atmosphere. It frequently causes the images of remote objects to be seen double, distorted, inverted, as if reflected in a mirror, or to appear as if suspended in the air. During a mirage the bull's-eye is frequently seen elongated vertically and the outlines covered with a haze, giving a wavy and unstable appearance. It occurs on cloudless days, especially over low ground, or ground not covered with grass. It is most noticeable when firing from the prone (lying down) position, or when close to the ground. The target is really lower than it appears to be and the rear sight elevation should be decreased accordingly. The amount can be determined by the sighting, or trial, shots.

It sometimes happens during the existence of a mirage that a strong lateral wind carries the heat waves in the direction of the wind and the deflected image of the bull's-eye will be in that direction, in addition to appearing to be higher than it really is, in which case it may be necessary to make lateral, or windage, allowance as well as decreased elevation.

A "dancing target" does not always indicate the presence of a mirage. This dancing frequently happens on a bright and extremely hot day. Its greatest draw-



back is that the shooter has difficulty in securing a well-defined bull's-eye at which to aim. It is difficult to tell, under this condition, just where the bull's-eye ends and the white of the target begins. Little sight adjustments are necessary, but extreme care must be taken in aiming. Some experienced marksmen are able to judge the velocity of the wind by the movement of these heat waves across the face of the target.

The effect of bright sun on the sights or on the target can be partly overcome by "doping" the sights—that is, by blacking them. There are a number of sight "dopes" on the market, but most shooters prefer to burn camphor gum and hold the sights in the dense part of the smoke. This gives an even dull black coating and is very satisfactory.

A substitute for camphor-smoking may be had in smoking with a burning match. This smoke is likely to leave a gloss if the work is not particularly well done. To avoid this, hold the sight 2 inches or more from the burning match at the point where the smoke begins to dissipate.

Before smoking sights they should be freed from oil. This can be done by first applying gasoline or alcohol, allowing it to evaporate, and then smoke with burning camphor or match as stated.

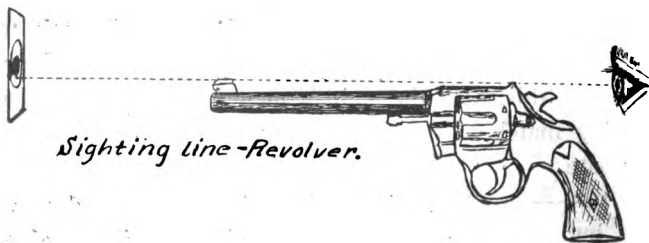
*Sight Adjustments.*

The elevation of the rear sight should be increased to overcome the following:

Low velocity of ammunition, a high barometer, low temperature, dry weather, bright sights or a dark target, and when wind is blowing toward the firing-point from the direction of the target.

The elevation of the rear sight should be decreased to overcome the following:

High velocity ammunition, a low barometer, high temperature, damp weather, dark sights or a bright target, existence of a mirage, and when wind is blowing toward the target.



## CHAPTER VI.

## AMMUNITION.

There are a number of reliable makes of ammunition. The choice of a particular make and sticking to it is good practice. By doing this one becomes accustomed to the peculiarities of that particular kind, just as you get accustomed to your rifle or revolver.

The War Department superintends an annual test of ammunition for the purpose of selecting the make which stands the best accuracy test for use at the national competitions. These tests usually show that the difference in the products of the reliable firms is very slight and a large order is given to all competitors.

In these competitions the Ordnance Department of the Army always enters as a competitor.

The competitions test the ammunition used in the Army only and do not include the many other kinds.

The purchasing of large quantities from all competitors is for the purpose of encouraging the manufacture of ammunition fitted to Government firearms, so that in the event of war there would be ample machinery in the plants of the different manufacturers to turn out the great quantities of service ammunition which a war would demand.

Crank shots soon become wedded to a particular

make of ammunition and it would be just as easy to convince them that another make is just as good as to prove the moon is or is not made of green cheese. Because a marksman of national reputation condemns a particular make of ammunition does not necessarily mean that the ammunition is faulty.

There are also many crank shots who reload their own ammunition, when this is permitted by the rules of the competitions in which the ammunition is used. Few of them do it from the standpoint of economy, but because they think they can get better results, and no doubt some of them who make a careful study of the matter do secure better results. As a matter of economy, if one has time which cannot be devoted to any other useful purpose, something can be saved by reloading; but there is such a small difference between the cost of the materials used in the reloading and the cost of the ready-loaded ammunition that this feature is not an attractive one.

A number of firearms manufacturers do not guarantee their arms against reloaded ammunition, for the reason that mistakes in the quantity of the powder charge may be made and the chamber of the firearm might be subjected to pressure greater than the factor of safety provides for. An accident of this kind might not only be disastrous to the firearm, but might do serious injury to the individual using it.

For the benefit of those who may care to reload ammunition, the following tables showing the quantities of powder of the several makes to be used in reloading the various cartridges are given

## RIFLE CARTRIDGES.

CHARGES FOR LOADING AND RELOADING RIFLE CARTRIDGES WITH SMOKELESS POWDERS NAMED.

	No. 1 Du Pont, grains.	No. 2 Du Pont, grains.	.30 Cal. Du Pont, grains.	Laflin & Rand .30 Cal. W. A., grs.	Laflin & Rand Sharpshooter, grs.	Laflin & Rand Lightning, grs.
.22 Single Shot.....	5	.....	.....	.....	.....	.....
25-20 W. C. F.....	6	.....	.....	.....	3	.....
25-20 Marlin.....	6	.....	.....	.....	3	.....
25-20 Single Shot.....	7	.....	.....	.....	3	.....
32 W. C. F.....	.....	7	.....	.....	5	.....
32 Marlin Safety.....	.....	7	.....	.....	5	.....
32 Colt Lightning.....	.....	7	.....	.....	5	.....
38 W. C. F.....	.....	13	.....	.....	11	.....
38 Marlin Safety.....	.....	13	.....	.....	11	.....
44 W. C. F.....	.....	15	.....	.....	13	.....
44 Marlin Safety.....	.....	15	.....	.....	13	.....
25-35 W. C. F.....	.....	.....	21	.....	.....	16
25-35 S. Range.....	.....	8	.....	.....	.....	.....
30 W. C. F.....	.....	.....	29	.....	.....	22
30 W. C. F., S. Range.....	.....	9	.....	.....	.....	.....
303 Savage.....	.....	.....	28	28	.....	.....
303 Savage, S. Range.....	.....	10	.....	.....	.....	.....
30 Army.....	.....	.....	34	34	.....	.....
30 Army, S. Range.....	.....	11	.....	.....	.....	.....
32 W. Special.....	.....	.....	.....	.....	.....	22
32-40.....	15	.....	.....	.....	11	.....
32-40 S. Range.....	.....	12	.....	.....	.....	.....
38-55.....	18	.....	.....	.....	13	.....

## RIFLE CARTRIDGES—Continued.

	No. 1 Du Pont, grains.	No. 2 Du Pont, grains.	.30 Cal. Du Pont, grains.	Laflin & Rand .30 Cal. W. A., gra.	Laflin & Rand Sharpshooter, gra.	Laflin & Rand Lightning, gra.
.38-55 S. Range.....	.....	10	.....	.....	.....	.....
.38-56 W. C. F.....	19	.....	.....	.....	14	.....
.38-70 W. C. F.....	23	.....	.....	.....	18	.....
.38-72 W. C. F.....	25	.....	.....	.....	20	.....
.40-65 W. C. F.....	26	.....	.....	.....	17	.....
.40-70 W. C. F.....	27	.....	.....	.....	17	.....
.40-72 W. C. F.....	26	.....	.....	.....	.....	.....
.40-82 W. C. F.....	27	.....	.....	.....	20	.....
.45-90 W. C. F.....	33	.....	.....	.....	22	.....
.45-70 Model 1886.....	26	.....	.....	.....	20	.....
.45-70 330 Model 1886.....	26	.....	.....	.....	20	.....
.45-70-350 Model 1886.....	26	.....	.....	.....	20	.....
.45-70-405 U. S. Gov't.....	26	.....	.....	.....	20	.....
.45-70 Marlin.....	26	.....	.....	.....	20	.....

## PISTOL CARTRIDGES.

CHARGES FOR LOADING AND RELOADING PISTOL CARTRIDGES WITH  
SMOKELESS POWDERS NAMED.

	No. 2 Du Pont, grains.	L. & R. Bull's Eye, grains.
.32 S. & W.....	2.0	1.0
.32 S. & W. Long.....	3.5	2.0
.32 Colt.....	2.5	1.5
.32 Colt New Police.....	3.5	2.0
.32 Short.....	2.5	1.5
.32 Long.....	3.0	1.5
.38 S. & W.....	3.5	1.5
.38 Short.....	3.0	2.0
.38 Long C. D. A.....	5.0	2.5
.41 Long Colt D. A.....	6.5	3.5
.44 S. & W. Russian.....	7.0	.....

### *Caliber.*

The caliber of a cartridge means its diameter expressed in hundredths of an inch. When we speak of .22-caliber, .32-caliber, .38-caliber, etc., we mean that the cartridge is made for a firearm the diameter of whose bore is 22 one-hundredths of an inch, etc.

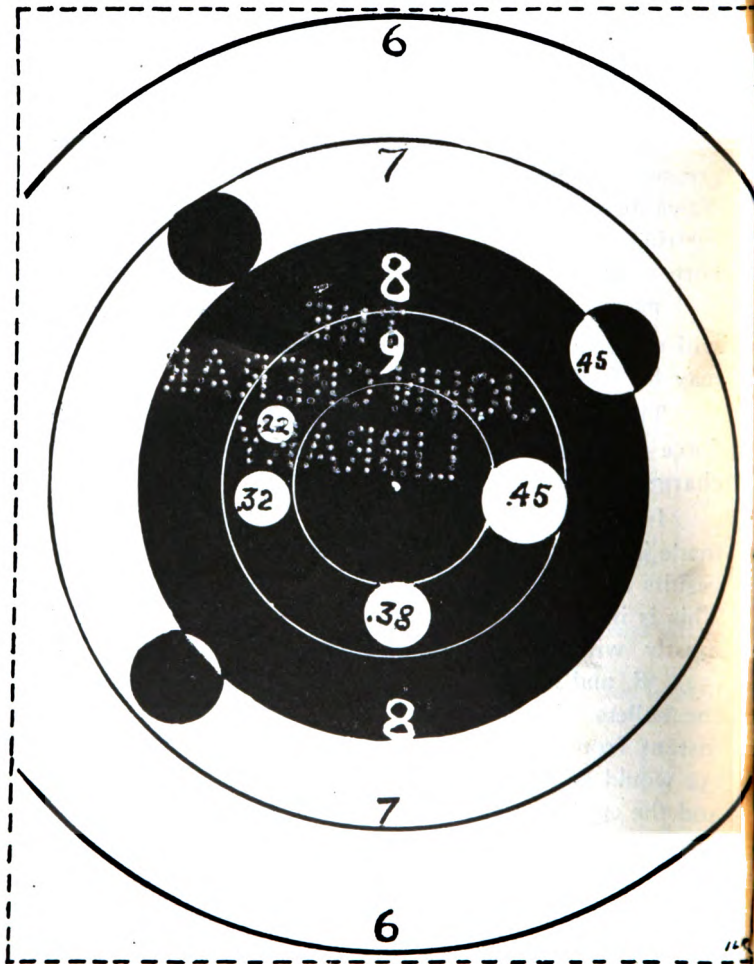
The larger the caliber the larger will be the hole it will make in the target or other thing at which the shot may be fired.

The larger the caliber the greater is the stopping-force of the bullet, provided it has the necessary powder charge behind it.

In target firing the increased diameter of the hole made in the target by the larger caliber bullets sometimes results in increased value of the hit made on the target. This is illustrated in Figure 42. The hits which appear mostly within the 9 ring that are indicated as .22, .32, .38, and .45, which numbers refer to the caliber of the bullets making the holes, have their centers equally distant from the center of the bull's-eye. The .22 and .32 would be scored as 9s, while the .38 is plainly a 10, and the .45 breaks well into the 10 count.

This chance of increased count has been sufficient cause to influence many pistol and revolver shots to use the larger caliber firearms for target purposes.

The smaller caliber firearms, however, will make ample compensation by possessing less recoil.



**FIG. 42.**

Comparative size of hole made in target by different caliber bullets.



A great many dealers give special prices on ammunition to members of the National Rifle Association, the United States Revolver Association, and affiliated clubs. If one does any considerable amount of shooting, more can be saved in the purchasing of ammunition than is paid for annual membership in these clubs.

These special rates are seldom made on purchases of less than five hundred rounds of one caliber, excepting in the larger calibers.



## CHAPTER VII.

## THE CARE OF FIREARMS.

One of the greatest causes of inaccuracy in shooting is the neglect to properly care for the firearm. There seems to be a popular impression that a rifle or revolver may be fired repeatedly and laid away with impunity, to be cleaned at a more propitious time. This impression is not without its following among the shooting fraternity; or it may be that it is pure carelessness; but the fact remains that many excellent firearms are ruined by neglect to clean them immediately after shooting, or sufficiently often during the match.

Then there are a great many firearms that are promptly cleaned, but are ruined in the process through want of knowledge of how to properly clean them.

The bore gives direction to the bullet, and it follows that should anything happen to impair the bore, the accuracy has been affected. The bore is, therefore, the most important part of a firearm. It should be promptly and thoroughly cleaned after shooting, and oiled to prevent rust, before laying away.

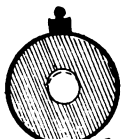
Of the entire bore the part nearest the muzzle is the most important, as the bullet gets its final direction just before leaving the barrel. In cleaning, care should be

exercised that this part of the bore, particularly, should not become scratched or worn.

Wiping out should always be done from the breech end, when this is possible. If this is not possible, then great care should be exercised that the muzzle be not worn by metal cleaning rods.

The bore is originally round. When the bullet leaves the muzzle the gas pressure against its base should be equally distributed, which, with a perfectly formed bullet and a round bore, will always be the case. Should the bore be worn oval by the constantly passing in and out of a metal rod used in cleaning, the gas on the side of the bore which has been worn will escape alongside the bullet and the unequal pressure against the base of the bullet resulting because of this will have a tendency to tumble the bullet and throw it out of its true course.

Figures 43 and 44 show the nature of the wear caused by using a metal rod. The dotted lines show



The wearing away of the bore caused by cleaning from the muzzle end with a metal rod.

the original bore. In Figure 43 the wear has been on the side next the sight, the most common location of it, as most people in cleaning a rifle rest it on its heel, holding the barrel with the left hand and operating the cleaning-rod with the right.

Sometimes there is an even up-and-down bearing of the cleaning-rod at the muzzle when cleaning, when the result of the wearing process is on two sides, as shown in Figure 44.

Where cleaning from the breech is not possible, use a wooden rod. If not a wooden rod, then a metal rod of softer material than the barrel of the firearm, preferably brass.

The twisted wire rods with bristle brush which are sold in all sporting goods stores for use in cleaning pistols and revolvers should have the wire portion wrapped with cotton cord. This will prevent wearing and scratching of the barrel.

A "pull-through" is a strong cord having a weight smaller than the bore of the firearm at one end and the cleaning-rag or brush at the other. The weight is dropped through the bore and the rag or brush is then pulled through by means of the cord. There is no danger of wearing or scratching in its use, and for this reason it is safer than cleaning-rods. The only danger is in breaking the cord and leaving a rag in the barrel, which is sometimes difficult to dislodge, and frequently injury is done to the bore in removing.

Any obstruction in the bore should be removed by light blows with a smooth steel rod, striking from the breech end.

The part of the barrel at and near the muzzle should be cleaned with a soft pine stick. Great care should be taken that no burrs or scars are made at the muzzle. This can best be prevented by using a soft wood stick for the cleaning at that end.

The bore should be cleaned immediately after using. This is doubly a requirement when using smokeless powders, for if the residue is left in the bore, it will soon destroy the polish, and "eat" into the metal. After this has occurred, it is impossible to restore the bore by cleaning or repolishing to its original efficiency.

While firing the bore should be cleaned at least as often as every ten shots when using black powder and every fifty shots when using smokeless powder. The "lesmoke" powders need cleaning after every twenty shots.

Sometimes in using black powder parts of the bore will become "caked"—that is, will have small areas covered with hard, burned powder which cannot be removed without the use of water. Water should not be used in cleaning the bore when it can be avoided, but when necessary to do so, the bore should be thoroughly dried and then oiled before putting away. After twenty-four hours the oil should be removed, the bore again wiped thor-

oughly dry and reoiled. This is a safe precaution even if water has not been used.

Firearms kept on or near the sea-shore should be looked after often, as the salt water air is sure to cause rust to form in the bore unless this is done. All polished parts and bearings should be coated with a good grade of vaseline.

A splendid way to prevent rust in the bore in any climate is to thoroughly saturate a cotton cord or wicking the size of the bore with some good rust-preventive gun oil, which any reliable sporting goods man will recommend, and pull this cord or wicking into the bore by means of a smaller cord. When in it should fit tight, so that the cord is pressed into the grooves. The bore should be well cleaned and perfectly dry before this is done. After wick has been pulled into bore, seal breech and muzzle with vaseline.

The "rags," or cleaning-patches, used in cleaning should be flannel or Canton flannel cut to a size that will pass through the bore without using any great force. The fit should be snug and tight enough to have a bearing on all parts of the bore as it passes through, but a rag that promises to "get stuck" in the barrel should be promptly removed.

There are several good gun oils on the market. It is cheapest in the long run to buy them and not doctor your gun with home-made oils. Kerosene above all things should be avoided, as it usually contains some acid.

It is not a rust-preventive. It is sometimes used to "loosen up" the rust, but a good gun oil will do this better and is a preventive as well as a cure for rust.

In running a rod through the barrel allow it to turn in the hand and follow the rifling. If the rod is held rigidly without turning, the rag will pass across the rifling and leave dirt in the grooves. By allowing the rod to turn the grooves as well as the lands will be cleaned. One advantage of the "pull-through" is that it naturally follows the rifling. There are several makes of cleaning-rods to be had that automatically rotate with the rifle while cleaning.

In addition to the bore, all moving parts of a firearm should be kept clean and well oiled. The outside metal parts can be kept free from rust by an application of vaseline occasionally. After applying, wipe gently with a soft cloth.

Finger-marks will soon become permanent unless removed. This is especially true of blued firearms. Wipe them off before putting the gun away.

The wood parts should be rubbed with oil when cleaning the other parts. This will keep out moisture. The swelling of the stock may cause it to warp and affect the shooting qualities of the gun. The moisture may also be conveyed to metal parts and cause rust.

A rag should never be left in the barrel, especially at the muzzle. It may be forgotten, and should you fire without removing it, the barrel would be ruined. A rag

is apt to absorb moisture and cause the bore to rust where it comes in contact with it.

Before using, the bore should be thoroughly cleaned. It should be dry when firing begins.

• A steel wire brush should seldom be used. Should a brush be necessary, use a brass wire or stiff bristle brush. This applies particularly to pistols and revolvers. The brush should be dipped into cleaning oil before using.

In putting away firearms it is best to avoid leather cases, as leather absorbs moisture. Wrap in an oiled rag, or place in a canvas case lined with wool.

The sights of a gun should always have the best of care. It is a common practice to lean a gun up against a brick or stone wall, a stone fence, or in the house, against the plastered wall. This wears the front sight down, as it is the front sight that touches these abrasive surfaces. The slightest wear off the top of the front sight has a marked effect on the accuracy of the shooting unless adjustments are made to overcome it. Care should also be exercised that the sights do not become sprung or bent.

“Ringing” is the creation of a smooth, round ring on the inside of the barrel, which extends sometimes completely around the bore, and is caused by firing when there is an obstruction in the barrel, such as a piece of cloth detached from the cleaning-patch, or a bullet which may have become clogged and immovable. “Ringing”



causes the gun to shoot erratically because it allows the powder gas to escape around the bullet at this point. The only remedy is a new barrel, for a barrel in this condition cannot be of any possible service. Instead of "ringing," a barrel frequently bursts from the same cause, and sometimes splits from end to end.

It should be remembered that few machines are called upon for the degree of accuracy in their work that is demanded of a good rifle, revolver, or pistol, and in return they should have the care which an accurate machine requires.

The injurious effects of snapping may be largely overcome by placing a piece of rubber under the hammer, allowing this cushion to absorb the blow when the hammer falls. It will be necessary to remove it before firing.



## CHAPTER VIII.

## TARGETS.

A target is a mark set up to be fired at in rifle, revolver, or pistol practice.

It has been found that the best method of determining comparative values of successive shots is to divide the target into various divisions, usually circles with common centers, and to give values to hits within, the annular space of succeeding circles decreasing as they become smaller and reaching the highest value at the center, called the "bull's-eye," the part sought to be hit. The bull's-eye is really *the* target, as it represents the maximum value, and is the point aimed at; the other values simply are used to measure the percentage of error; for it must be plain that if the bull's-eye is fired at and missed, the hit locating in the next lowest value, there is an error, even though the smallest which the target can denominate. The extent of the error increases as the hits enter circles of increasing diameter, until the entire target is missed, when there is no longer any means of determining its extent.

The targets in most general use in the United States are the Military and the Standard American targets. What is known as the International target is coming in to some favor, but its adoption is slow.

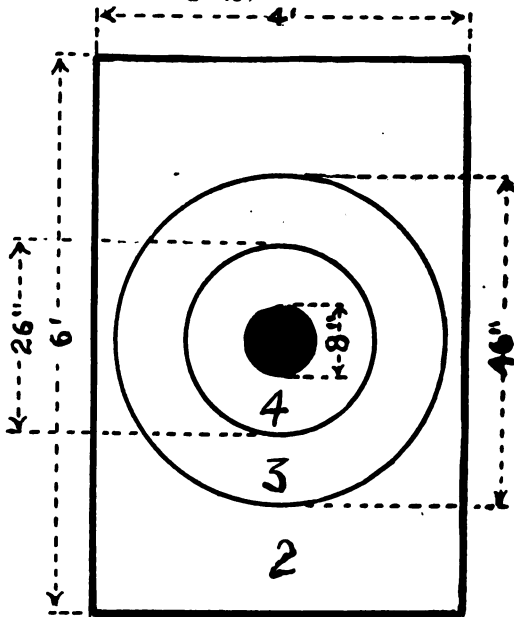
*Military Targets.*

The principal Military targets, prescribed by the

War Department for use in the Army and Organized Militia, and also used in some matches by the National Rifle Association and affiliated clubs, are described as follows:

*Target A, for Rifle Practice.*

Target A (see Fig. 45) is known as the short range



**TARGET A**  
**Figure 45.**

For use with the rifle at 200 and 300 yards. Used with revolver at 15, 25, 50 and 75 yards.

target, and is used for rifle practice at 200 and 300 yards.

The bull's-eye is a black circular center 8 inches in diameter, and has a value of 5.

The center ring is 26 inches in diameter; value of hit, 4. This is called the "center."

The inner ring is 46 inches in diameter; value of hit, 3. This is called the "inner."

The "outer" is the remainder of the target, or rectangle, and has a value of 2.

The firing at the A target at 300 yards is done from the sitting or kneeling position. The position authorized for deliberate fire at 200 yards at Target A is standing, without any artificial rest, known as off-hand shooting. The gun-sling may be used, with certain limitations, at either range.

#### *Target B, for Rifle Practice.*

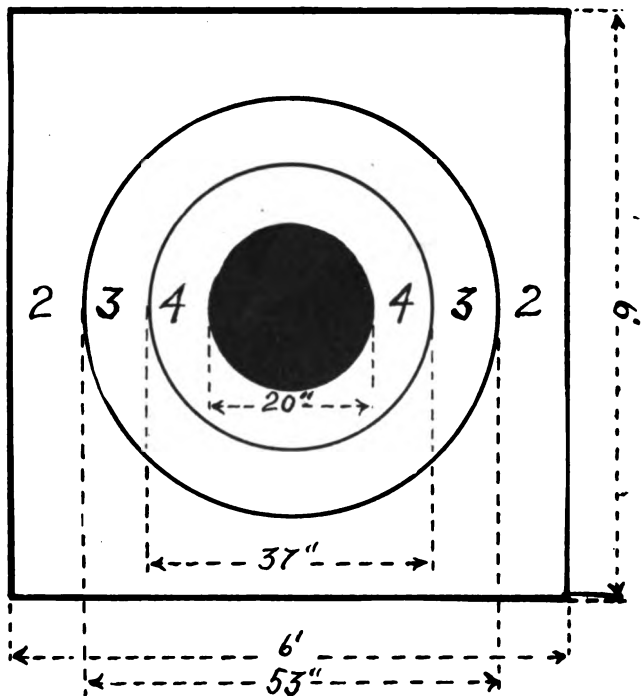
Target B (see Fig. 46) is the mid-range target, used at 500 and 600 yards. It is 6 feet high and 6 feet wide.

The bull's-eye is a black circular center 20 inches in diameter, and has a value of 5.

The center ring is 37 inches in diameter, has a value of 4, and is called the "center."

The inner ring is 53 inches in diameter, has a value of 3, and is called the "inner."

The "outer" is the remainder of the target, or square, and has a value of 2.



**TARGET B**  
**Fig. 46.**

For use in rifle firing at 500 and 600 yards.

The position taken by the rifleman when firing at this target is the lying down, known as the "prone," position. The gun-sling may be used. No part of the rifle or body may have any artificial support.

*Target C, for Rifle Practice.*

Target C (see Fig. 47) is the long-range target, and is used at 800, 1000, and sometimes 1200 yards. It is a rectangle 6 feet high and 12 feet wide.

The bull's-eye is a black circular center 36 inches in diameter, and has a value of 5.

The center ring is 54 inches in diameter, and has a value of 4. It is called the "center."

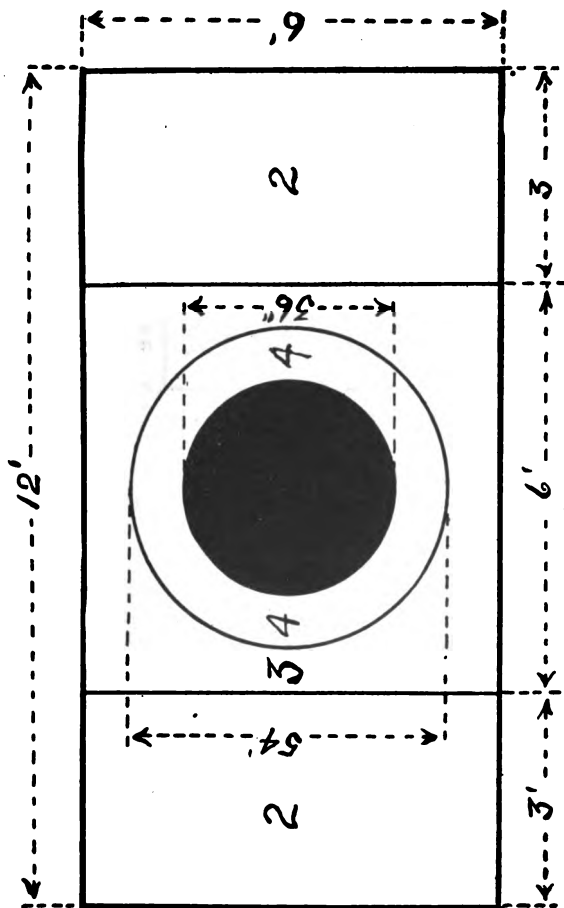
The "inner" on target C is the remaining space of a square 6 feet high and 6 feet wide in the center of the target, and has a value of 3.

The "outer" on this target is the rectangles on the ends, which are 3 feet wide and 6 feet high, and have a value of 2.

The position assumed by the rifleman in firing at this target is the "prone." The gun-sling may be used. No artificial support allowed for body or rifle.

*Target D, for Rifle Practice.*

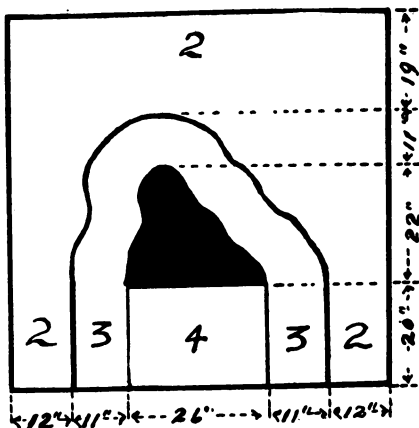
Target D (see Fig. 48) is the rapid fire and skirmish target. It is a square 6 feet high and 6 feet wide. A black silhouette, representing a soldier in the lying-down (prone) position, is placed in the middle of



**TARGET C**

*Fig. 47.*

For use in rifle firing at 800, 1000 and 120 yards.



**TARGET D**  
**Fig. 48.**

For use in rapid fire and skirmish fire with rifle.

the square. The value of the hits are, in the rapid fire, in the silhouette figure, 5; in the space below the figure, 4; in the concentric space immediately outside the figure, 3; remainder of the target, 2.

When the target is used for the skirmish, only such hits as appear in the silhouette figure and the space below it are marked and scored. All other hits on the square are misses. The value of the hits is the same as in rapid fire.

The position at the rapid fire is kneeling, after the command "Commence firing" has been given.



*Army Miniature Targets.*

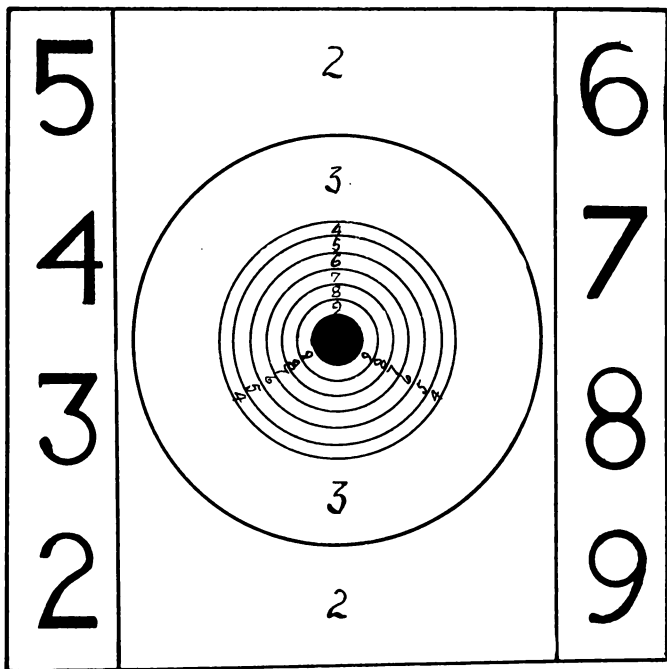
The X, Y, and Z targets are miniature targets and are used in gallery practice, and in some "special courses" where the organizations have no access to a regular rifle range. The X target is a reduction of target A, and has a bull's-eye  $1\frac{1}{2}$  inches in diameter. The Y and Z targets are smaller.

*Target N, for Revolver Practice.*

Target N (see Fig. 49) is a rectangle 4 feet wide and 6 feet high, with a black circular bull's-eye 5 inches in diameter; the value of a hit therein is 10. There are seven concentric rings, with values and diameters as follows:

Value of Hit.	Diameter of Ring.
9 .....	$8\frac{1}{2}$ inches.
8 .....	12 inches.
7 .....	$15\frac{1}{2}$ inches.
6 .....	19 inches.
5 .....	$22\frac{1}{2}$ inches.
4 .....	26 inches.
3 .....	46 inches.
2, outer, or remainder of rectangle.	

The large numbers on the sides of this target are for use by the men in the pits for signalling the value of hits back to the firing-point. A pointer is first placed over the hit in the target and then placed over the number on the side of the target corresponding to the value.



**TARGET N**  
**Fig. 49.**

Revolver target in use by Regular Army at 15, 25, 50, and 75 yards.

*Target Q.*

Target Q (see Fig. 50) consists of a steel skeleton frame, representing a soldier in the standing position of firing. It is covered with cloth and black paper cut as a



For use in mounted revolver firing.

silhouette to the shape of the frame. A horizontal line is drawn across the target at the crotch. Hits above this line count 2, and below the line 1.

One of the uses of this target is given in the mounted revolver course in Chapter X.

*Target R.*

Target R (see Fig. 51) consists of a steel skeleton frame, representing a soldier mounted. It is covered with cloth and with black paper cut as a silhouette to the shape of the frame. A horizontal line is drawn across



**TARGET R**  
*Fig. 51.*

For use in mounted revolver firing.

the target from the lowest point of the horse's head; hits above this line are scored 2; below the line, 1. This target is used in the mounted revolver course.

Military targets N, A, B, C, and D are operated from a pit in the ground, the targets moving up and down like a window. They are worked in pairs. When one target is up (exposed for firing), the other is down.

The men in the pits who operate the targets are called markers, but in soldier talk are called "sand-rats," also "ground-hogs." They work in front of the target that is down, with their backs toward the wall of the pit nearest the firing-point.

The pits are usually about seven feet deep, thus allowing the bullets to pass no nearer than 12 inches from the top of the head of a six-foot man. They are frequently deeper than this, and should be unless the pit walls are of concrete, especially the front wall.

In the illustration of a pit (Fig. 52) the marking-disks may be seen; the one with a black cross is the "3 count," and the white one the marker for a bull's-eye.

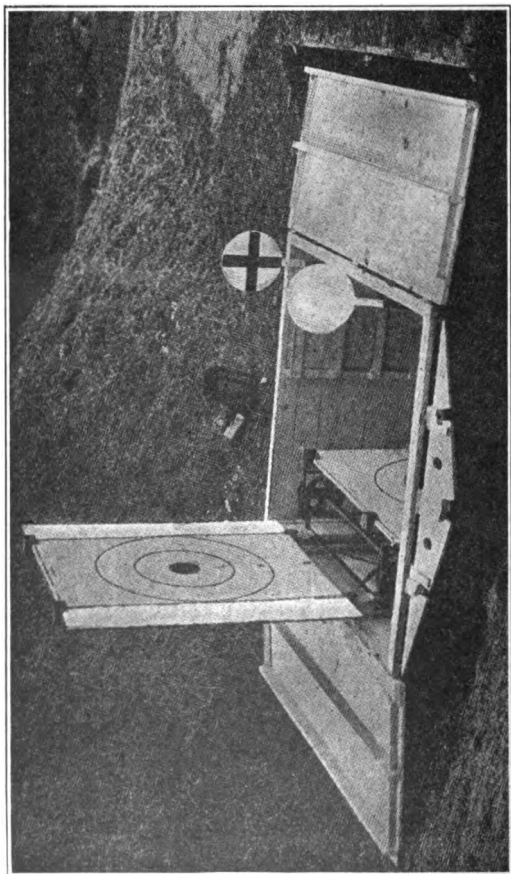
The targets are made of heavy paper of a light buff color, the bull's-eye, rings, and limit lines printed in black ink. These paper targets are pasted on canvas which has been previously stretched over a wooden frame the size of the target.

The same target is frequently used for five hundred shots and sometimes a great many more, depending on how the shots are grouped. The holes are pasted over with gummed pasters an inch in diameter, black pasters for the bull's-eye and buff or white for the remainder of the target.

#### *Standard American Targets.*

The Standard American Targets are used in some of the matches of the National Rifle Association and its affiliated clubs, the United States Revolver Association, and by many private galleries and clubs.

The 200-yard rifle target and the 50-yard pistol and revolver targets are the same and are called the No. 1 Standard American.



**Fig. 52.**  
Target pit, showing manner of working alternating targets.

This target contains the 4, 5, 6, and 7 rings in the white, and the bull's-eye containing the 8, 9, and 10 counts in black with white defining circles. The diameters of the several rings are as follows:

Value of Hit.	Diameter of Ring.
10 (Black) .....	3.36 inches.
9 (Black) .....	5.54 inches.
8 (Black) .....	8 inches.
7 .....	11 inches.
6 .....	14.8 inches.
5 .....	19.68 inches.
4 .....	26 inches.

The remainder of the target is 28x28 inches, and hits in it outside of the 4 ring count 3.

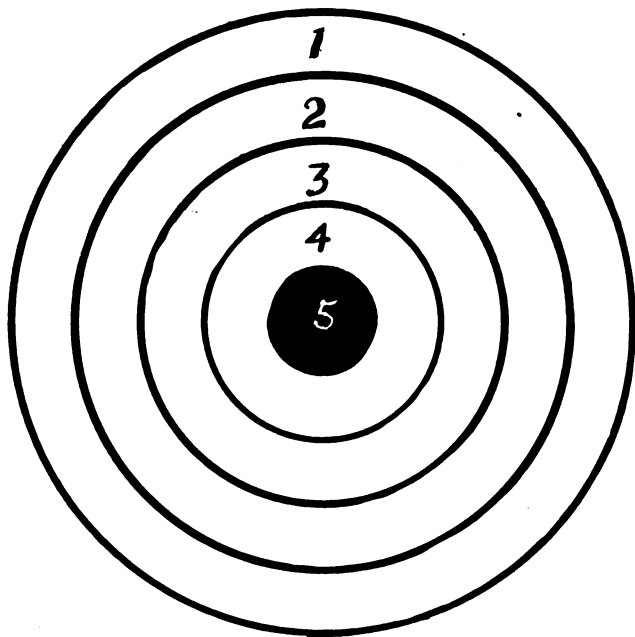
This target is proportionately reduced for shorter ranges.

For actual size of the bull's-eye of the 20-yard revolver Standard American target, see Fig. 42 in chapter on "Ammunition."

The 25-yard small-bore rifle target, giving actual size of the rings from 19 to 25, is shown in Fig. 77 in chapter on "Model Scores."

Fig. 53 is actual size of a 25-yard small-bore rifle target that is in very common use, but is not used much in matches. The Fig. 77 target is the most commonly used for matches.

The International Target, as its name will indicate, was designed for use at international matches, where

*Fig.53.*

Actual size of a popular practice target for use at 25 yards with .22 caliber rifle.



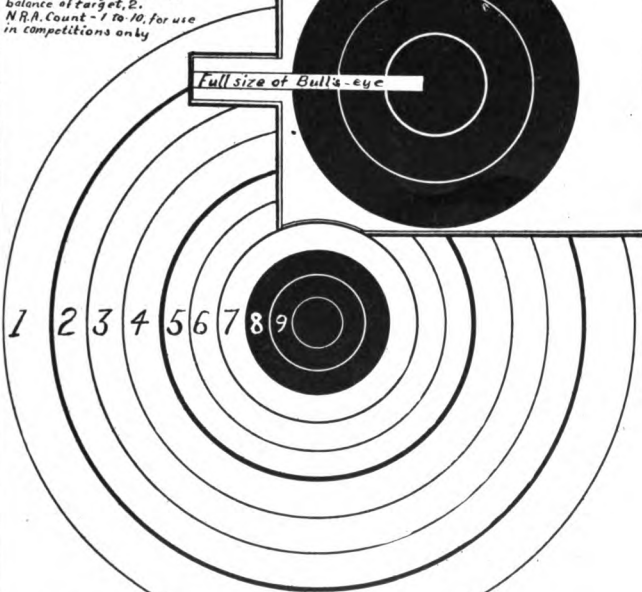
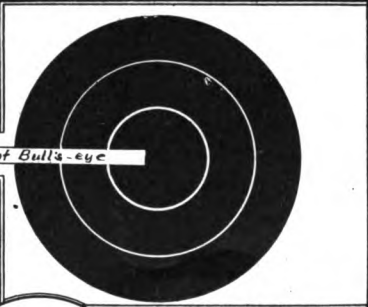
NATIONAL RIFLE ASSOCIATION OF AMERICA

50. Foot Gallery Target.

COUNT

Military Count - All within the 9 ring, 5;  
five to eight ring inclusive, 4;  
two to four ring inclusive, 3;  
balance of target, 2.  
N.R.A. Count - 1 to 10, for use  
in competitions only

Full size of Bull's-eye



SCORE

1	2	3	4	5	6	7	8	9	10	TOTAL

Name \_\_\_\_\_

Organization \_\_\_\_\_

DATE \_\_\_\_\_

ARM \_\_\_\_\_

POSITION \_\_\_\_\_

I certify that the conditions as laid down by the National Rifle Association of America have been strictly adhered to in the firing of the above score

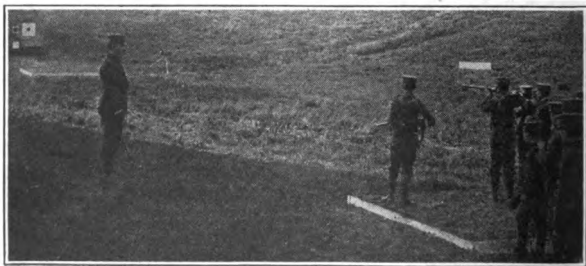
Range Officer \_\_\_\_\_

Fig. 54.

National Rifle Association gallery target.

rifle or revolver teams from different countries meet in competition. It has been but little used in the United States. Strong efforts have been made to have the United States Revolver Association adopt it for its competitions, but without success. Most of our records have been made on the Standard American and it would be difficult to compare with any records that might be made on the International and the change would lead to endless confusion.

The National Rifle Association Target used in inter-collegiate and school-boy competitions, for indoor shooting, and also the 25-yard small-bore rifle target, is shown in Figure 54. The bull's-eye in the upper right-hand corner is shown actual size. The target proper has been reduced to meet the demands of the size of the printed page.



## CHAPTER IX.

## MARKING AND SCORING.

In all shooting competitions and in firing for qualification and percentage medals some sort of record is kept of the shots fired, and of their value. In all gallery shooting scores of five or ten shots are fired on a target, and these targets themselves constitute the record after they have been duly certified by the proper official of the club or gallery.

The marking and scoring for the outdoor shoots is more complicated, and consist of two sets of officials, viz.: those at the firing-point and those in the pit, where the targets are operated.

The men working in the pit operate the targets, ascertain where the hits are made on the targets, signal the value back to the firing-point, and perform all other things necessary to keep the targets going.

These men are called markers. The officer in charge of them is called a pit officer. The work they perform is called marking. They are provided with marking-disks, "spotters," and pasters.

The marking-disks are circular in form and of sufficient size at each range to be plainly seen from the firing-point. Each one is placed on the end of a staff of sufficient length to permit the user to expose the disk, so

as to be seen at the firing-point, without exposing himself to bullets flying over the pits.

The disks are four in number, having the value of 2, 3, 4, and 5, respectively. The black disk (see Figs. 55, 56, 57, and 58) counts for a 2; the black cross on a white field, 3; red disk, 4; and plain white, 5, or bull's-eye.

After a target has been fired at, it is pulled down into the pit and the value of the shot ascertained; the disk representing that value is then exposed to the view of the scorers at the firing-point. It is held thus exposed for a sufficient time to give the scorers ample opportunity to plainly see it and ascertain its value.

Usually the red and white disks (Figs. 57 and 58) and the black and black cross (Figs. 55 and 56) are reverse sides on the same disk, making only two disks necessary to represent the four values of the target.

A red flag (see Fig. 59) attached to a staff is used as a danger flag and also to indicate a miss. When the red flag is exposed before a target, it is a signal that under no circumstances will the target be fired on until the flag is removed.

Should the red flag be waved in front of the target after a shot has been fired, it indicates that the shot has not hit the target within any surface having a value, and is recorded by the scorer as a miss.

Sometimes the men in the pit can tell where the shot has gone even though it has not hit the target. In that case it is customary to wave the flag in the direction the



Fig. 55



Fig. 56.

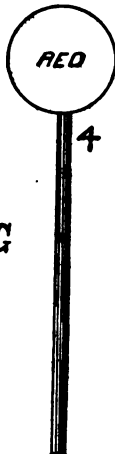


Fig. 57.



Fig. 58.

**MARKING  
DISKS**

NAME <i>Samuel Smith</i>	DATE <i>May 2, 1911</i>														
ORGANIZATION <i>Co. 13 4th U.S. Inf</i>	PLACE <i>Camp Perry</i>														
	YDS. <i>800</i>														
MILES of WIND <i>8 miles</i>															
CLOCK <i>3</i>															
WINDGAUGE															
ELEVATION <i>750 yds.</i>															
SCORE	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>TOTAL</td> </tr> <tr> <td><i>4</i></td> <td><i>4</i></td> <td><i>5</i></td> <td><i>4</i></td> <td><i>5</i></td> <td><i>5</i></td> <td><i>23</i></td> </tr> </table>	1	2	3	4	5	6	TOTAL	<i>4</i>	<i>4</i>	<i>5</i>	<i>4</i>	<i>5</i>	<i>5</i>	<i>23</i>
1	2	3	4	5	6	TOTAL									
<i>4</i>	<i>4</i>	<i>5</i>	<i>4</i>	<i>5</i>	<i>5</i>	<i>23</i>									

Fig. 60.



No hit—"Miss."  
Also, Danger.  
Fig. 59.

Rifle Range Accessories—Marking Disks, Score Card and Danger Flag.

bullet passed the target, pointing the flag up and waving high for a high shot; pointing to the right and waving in that direction for a shot off to the right, etc.

After the value of a shot has been ascertained and signalled to the firing-point, a "spotter" is attached to the target where the bullet passed through.

A "spotter" is made of stiff cardboard, black on one side and white on the other, having a stiff spring wire attached in the center on either side. They are attached to the target by passing this wire through the bullet-hole. The black side is exposed if the bullet has passed through the white part of the target, etc.

The spotter is of sufficient size to be plainly seen on the face of the target from the firing-point. Its purpose is to indicate to the shooter the exact location of his previous shot, that he may make any necessary changes in his sights or windage.

The spotter is removed after the target has been fired on the second time, and the first hole is then pasted over with a paster, and the spotter moved to the last hit.

Pasters are usually round pieces of paper, 1 inch in diameter, and gummed on one side. Another form of paster is square and comes in perforated sheets like postage stamps. This form is not gummed, but they are stuck on the target with ordinary flour paste.

Hits in the bull's-eye are covered with a black paster, and on other parts of the target with a white or buff paster. In pasting care should be taken to avoid

pasting white surfaces with black pasters, or black surfaces with white pasters.

On all modern ranges there is telephonic connection between the pits and the firing-point.

The officials at the firing-point are called scorers. Their work is called scoring, and consists of writing down on score-cards, in a score-record book, or on a blackboard, the value of the shots as they are signalled from the pits.

The officer in charge is called a range officer, and it is his duty to see that the scores are properly kept, that the contestants observe all the rules governing the shoot; and he performs other necessary work pertaining to the proper conducting of the match.

In marking timed fire and rapid fire shooting the target is not pulled down until the completion of the score, when all the hits of that score are signalled, beginning with the highest in value.

When spotters are not used, the disk is placed with its center over the hit in the target when signalling the value of the hit, in order to show its location on the target.

Many good shots prefer to keep a record of their scores, and in doing so use a miniature target. (Fig. 60.) The shots are plotted as they are signalled, and when the score is complete, the shooter has a miniature target showing the exact location of the hits on the larger target. He also keeps other data, such as the velocity of the wind,

its direction, setting of wind-gauge on his rifle, the distance fired, elevation of sight used, etc. In firing subsequent scores at the same range this data will be useful.

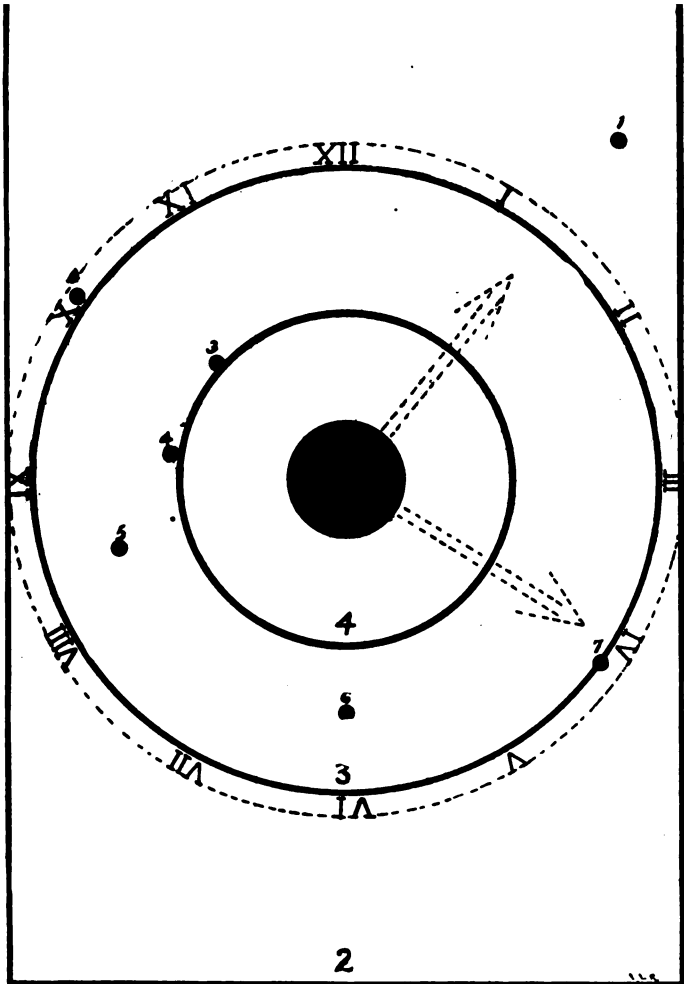
In plotting shots the sighting (trial) shots are marked "1ss" and "2ss," meaning first and second sighting shots. The succeeding hits on the target are then plotted, numbering them successively in the order of their occurrence—1, 2, 3, 4, and 5.

For convenience in locating shots the scheme of considering the target to represent the face of a clock with the hands attached at the bull's-eye is a good one. (See Fig. 61.)

In this figure the shots are numbered in the order of their occurrence. The first shot is in the 2 space and in the upper right-hand corner of the target, or approximately in the same direction from the bull's-eye the hour hand would point at 1 o'clock, and by this method would then be called a "1 o'clock 2." The second shot would be a "10 o'clock 2," the third shot a "10 o'clock 4," etc. The half hours are seldom used.

By referring to the third shot of this figure, it will be seen that the value given this hit above, viz.: 4, is apparently incorrect, as most of the hole lies within the 3 ring, or the "inner." The rule in counting the value is that the next highest value will be given a hit if the "mark of the bullet" rests on the ring enclosing the next highest value. This does not mean that when the paper breaks into the ring of the next highest value





**Fig. 61.**

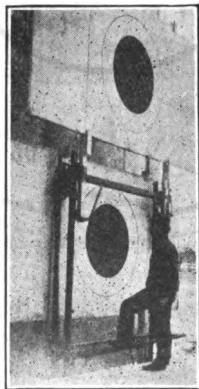
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The Clock Dial System of indicating location of hits on a target.

that value will be given the hit. It must be the "mark of the bullet"—that is, the hole made by the bullet, and not the broken edge resulting from the bullet passing through the target.

Hits of this kind frequently occur and are sometimes very hard to decide. The eye only may be used in judging. No magnifying-glass is permitted, nor is it permissible to place a lead pencil or similar article in the hole to aid in arriving at a decision.

A "ricochet" hit is a hit where the bullet first struck the ground and rebounded, striking the target. These hits are counted the same as direct hits, but in signaling them the red flag is exposed at the time of exposing the disk indicating the value of the hit.



## CHAPTER X.

### QUALIFICATION, COMPETITION, AND PERCENTAGE MEDAL FIRING.

There are numerous trophies, medals, badges, and pins awaiting to reward the successful marksman. These evidences of skill may be divided into three general classes, viz.: qualification badges, competitive trophies and medals, and percentage badges or medals.

The qualification pins and badges are given by the Army, the National Guard, and the National Rifle Association to persons who secure the necessary scores at the distances and targets prescribed for each grade of qualification.

The grades of qualification, beginning with the lowest, are: Marksman, Sharpshooter, and Expert Rifleman. The firing for the badges and pins of these grades in the Army and National Guard is open for members of these organizations only. The National Rifle Association qualifications may be participated in by all members of clubs organized under the rules and regulations of the National Board for the Promotion of Rifle Practice in the United States and affiliated with the National Rifle Association of America, and members of the Association.

The requirements for the Army classifications are:

*Marksman's Course.**Fig. 62.***The Marksman's Pin, or Insignia.**

To qualify as Marksman the soldier is required to fire the following course and to make a total of 300 out of a possible 500.

200 yards. Target A (Fig. 45); two scores of 5 shots each; maximum time of one minute per shot. Position, standing. Possible, 50.

300 yards. Target A; two scores of 5 shots each; maximum time of one minute per shot. Position, choice of sitting or kneeling. Possible, 50.

500 yards. Target B (Fig. 46); two scores of 5 shots each; maximum time of one minute per shot. Position, prone (lying down). Two sighting shots required before record score begins. Possible, 50.

600 yards. Target B; two scores of 5 shots each; maximum time of one minute per shot. Position, prone (lying down). Two sighting shots required before record score begins. Possible, 50.

200 yards. Target D (Fig. 48); two scores of 5 shots each, rapid fire (five shots in twenty seconds). Position, kneeling. Possible, 50.

300 yards. Target D; two scores of five shots each, rapid fire (five shots in twenty seconds). Position, choice of sitting or kneeling.

Skirmish runs: two skirmish runs, firing in each run 2 shots at 600 yards, 2 shots at 500 yards, 3 shots at 400 yards, 3 shots at 350 yards, 5 shots at 300 yards, and 5 shots at 200 yards. Thirty seconds time allowed for firing the shots named for each range. The approach to each range is made at double time (a slow run). Target D is used for the skirmish. Possible to make 100 in each run, or a total of 200 for the skirmish firing.

In addition to the above, the soldier is required to make an average of 80 points in five consecutive estimates of distances; that is, he must come within an average of 80 per cent of the correct distance of the distances estimated.

For description of the targets used in this and the following courses, see chapter on "Targets."

*Sharpshooters' Course.**Fig. 63.***The Sharpshooter's Badge, or Insignia.**

In the Sharpshooter's Course the soldier is required to shoot the Marksman's Course as just given, and the following in addition;

800 yards. Target C (see Fig. 47); two scores of 5 shots each; maximum time of one minute per shot. Position, prone. Two sighting shots required before record score begins. Possible, 50.

1000 yards. Target C; two scores of 5 shots each; maximum time of one minute per shot. Position, prone. Three sighting shots required before record score begins. Possible, 50.

500 yards. Target D; rapid fire (thirty seconds for

each score of 5 shots), two scores of 5 shots each. Position, prone. Possible, 50.

The possible total at these additional ranges is 150, out of which the Sharpshooter must secure as many as 90 points; and out of a possible total 500 in the Marksman's Course, and additional 150 in the additional ranges here given, or a possible total of 650, he must secure 415 points or over.

In addition to this, he must secure an average of 85 points in five consecutive estimates of distances.

*The Expert Rifleman's Test.*



*Fig. 64.*

The Expert Rifleman's Badge, or Insignia.

A description of the Army Expert Rifleman's test for the Army, to be understood, would take more space than is permitted here, since the course deals with moving and bobbing targets, firing from trenches, at several different silhouette targets and figures, in different positions. These exercises are in addition to the Sharp-

shooter's Course, and the shooter must make an average of 90 points in five consecutive estimates of distance. The Expert qualification in the Regular Army is very difficult to make.

Enlisted men in the Army who qualify as marksmen get \$2 per month extra pay, sharpshooters get \$3 per month extra and experts \$5 per month additional to the regular pay of their grade or rank.

*Distinguished Marksman.*



*Fig. 65.*

**The Badge, or Insignia, of a Distinguished Marksman.**

This is a competitive classification and is awarded to any officer or soldier who has won three authorized medals in department, departmental, division, and Army rifle or carbine competitions, or in department, departmental, division, and Army revolver competitions, or as a member actually firing on a prize-winning team in the national team match.



This distinction is announced by the War Department in orders, and the marksman is no longer eligible to enter the departmental competitions with the arm in the use of which he is distinguished.

If he is distinguished in the use of the rifle or carbine, he is designated as "Distinguished Marksman"; if in the use of the revolver, he is designated as "Distinguished Revolver Shot."

*Expert Revolver Shot (Army).*

There are two courses of firing for classification as expert revolver shot in the Army, viz.; the Dismounted Course and the Mounted Course. The Dismounted Course is for all dismounted soldiers, and the Mounted Course for all mounted troops.

In the dismounted course Target N (Fig. 49, chapter on "Targets") is used.

The dismounted course consists of the following:

15 yards. Two scores of 5 shots each, rapid fire (ten seconds for each score). Position, standing, holding revolver in one hand free from the body and from all artificial support. This position applies to the entire course. Possible, 100.

25 yards. Two scores of five shots each, rapid fire; and two scores of five shots each, timed fire (thirty seconds for each score). Possible, 200.

50 yards. Two scores of five shots each, timed fire. Possible, 100.

The dismantled course has a possible total of 400. It is necessary to get 320 points out of the 400 to qualify as revolver expert.

The mounted course is fired as follows: Target Q (See Fig. 50), being a silhouette of a man standing in position of firing, is pasted on Target B (see chapter on "Targets"). Five of these targets are placed to the right, left, right front, left front, and right rear, respectively, from firing-points on a riding track, and 10 yards distant from it. The soldier rides at the gallop, firing at each target as he passes it. This is done five times, making twenty-five shots in this exercise. Possible total, 50.

The soldier then fires at Target R (see Fig. 51), being a silhouette of a mounted soldier. There are five of these targets, arranged 15 yards from the track. Five shots are fired at each of two ridings, or ten shots at this exercise. The riding is at the gallop. Possible total, 20.

The third exercise consists of riding at the gallop past two Targets R, the targets being 15 yards from the track and 40 yards apart. The soldier rides past, firing five shots, using his own discretion as to what proportion of the shots he will fire at each target. Possible total, 10.

These exercises are in addition to the dismantled course, which is a part of the mounted course. The possible total for the mounted course is 480, and to qualify

as expert revolver shot it is necessary to secure 368 points, or 80 per cent of the possible total.

The same course for qualification is also prescribed for officers, both in the mounted and dismounted courses.

*Firing Course Prescribed for the Organized Militia.*

(National Guard.)

The rifle course prescribed for the Organized Militia is known as Special Course C. Proficiency in estimating distances is not a requisite for qualification in the National Guard. The badges issued are of bronze, somewhat similar in design to the Army badges.

The qualification requisites are as follows:

*Marksman.*

All who have fired two or more full scores of five shots each at 200, 300, and 500 yards, and from the best two scores at each range shall have made 98 points or more out of the possible total of 150, are classified as marksmen. The positions are the same as those prescribed for the Army at like distances.

*Sharpshooter.*

All who have fired two or more full scores at 200, 300, and 500 yards, and from the best two scores at each range have made a total of at least 120 out of the possible total of 150, and have further fired two or more full scores at 600 yards, and from the best two scores at that

range have made a total of at least 40 out of the possible total of 50; and have fired two or more full scores at 200 yards, rapid fire, twenty seconds for each score, and in the best two have made a total of 25 out of the possible total of 50; and have made one skirmish run of 20 shots, advancing from 600 to 200 yards; the total of all scores being not less than 235, out of a possible total of 350.

### *Expert Rifleman.*

All who have made the necessary total to qualify as sharpshooter and have fired two or more scores at 800 and 1000 yards, and from the best two scores at each range have made at least 40 out of a possible 50 at 800 yards, and 35 or better out of a possible 50 at 1000 yards.

### SPECIAL COURSE C SCORE CARDS.

Score-card used on the range for Special Course C, the course prescribed for members of the National Guard and the National Rifle Association and affiliated clubs in firing for qualification:

# COURSE "C" SCORE CARD.

19

Name ..... Co. .... Inf. ....

## MARKSMAN'S COURSE.

	SS	1	2	3	4	5	Score	1	2	3	4	5	Score	Range Officer
200 Yds.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total of the best two 5-shot scores at 200 yards .....

	SS	1	2	3	4	5	Score	1	2	3	4	5	Score	Range Officer
300 Yds.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total of the two best 5-shot scores at 300 yards .....

	SS	1	2	3	4	5	Score	1	2	3	4	5	Score	Range Officer
500 Yds.	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total of the best two scores at 500 yards .....

Aggregate for Marksman's Course .....

2nd class 67, 1st class 83, Marksman 98 out of a possible 150, and at least 120 required before shooting the Sharpshooter's Course.



## EXPERT'S COURSE.

800 Yds.	SS		1		2		3		4		5		Score	Range Officer	

Total of the best two 5-shot scores at 800 yards -----  
 At least 40 out of 50 is required at 800 yards.

1000 Yds.	SS		1		2		3		4		5		Score	Range Officer	

Total of the best two 5-shot scores at 1000 yards -----  
 At least 35 out of 50 is required at 1000 yards.

Expert counts 200 points, Sharpshooter 150, Marksman 100, 1st class 75, 2nd class 50, 3rd class 10, 4th class 0, for Company Figure of Merit.

### INFORMATION FOR SCORERS.

Value of disks: White 5, red 4, black and white 3, black 2. Ricochet, displaying flag same time disk is shown, score same as direct hit. A miss 0, is indicated by waving flag across the target.

Another popular form of score-card is shown below:

The directions as to windage and elevation would of course have to be changed to meet the particular fire-arm used with the score-card.

TROOP D. FIRST SQUADRON CAVALRY, M. V. M.																				
o'clock Wind										Light										
Name										Date										
YARDS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Totals																				
Totals																				
Totals																				
Totals																				
Certified Correct.										Scorer.										

Windage 1 pt. wind at 200 yds. equals 12" at 300 yds. equals 18" at 500 yds. equals 30"  
at 600 yds. equals 36" at 800 yds. equals 48" at 900 yds. equals 54" at 1000 yds. equals 60"

Elevation; 25 yds. elevation at 200 yds equals 3" at 300 yds equals 5" at 500 yds. equals  
17" at 600 yds. equals 22" at 800 yds equals 35" at 900 yds equals 41" at 1000 yds. equals 50"

(Obverse.)



## REQUIREMENTS FOR QUALIFICATION.

## RIFLE

**SECOND CLASS**—Two full scores at 200, 300 and 500 yards, making a total of 67 out of a possible 150 points.

**FIRST CLASS**—Two full scores at 200, 300 and 500 yards, making a total of 83 out of a possible 150 points.

**MARKSMAN**—Two full scores at 200, 300 and 500 yards, making a total of 98 out of a possible 150 points.

**SHARPSHOOTER**—Two full scores at 200, 300 and 500 yards, making a total of 120; two full scores making 40 at 600 yards; two full scores, time fire, at 200 yards (30 seconds limit to each score), making a total of 25; one skirmish run of 20 shots: the total of all scores being not less than 235 points.

**EXPERTS**—All who have *first* made the necessary total (235) in the Sharpshooter class, and in addition two full scores at 800 yards, total 40; two full scores at 1,000 yards, total 35; the total of all scores being not less than 310 points. Always blacken sights before commencing to fire. Grip the rifle firmly, and hold breath at time of firing.

## PISTOL

**SECOND CLASS**—Slow fire: 50 yards, two scores to make 40 out of a possible 50 points.

**FIRST CLASS**—Slow fire: 50 yards, two scores; one minute to each shot.

Timed fire: 25 yards, two scores; 30 seconds to each score.

Rapid fire: 25 yards, two scores; 10 seconds to each score.

15 yards, two scores; 10 seconds to each score.

The total of all scores to be not less than 130 out of a possible 200 points.

**SHARPSHOOTER**—Distances and number of scores same as for "First Class."

The total of all scores to be not less than 160 out of a possible 200 points.

**EXPERT**—Slow fire: 75 yards, two scores; 20 seconds to each shot.

Timed fire: 50 yards, two scores; 20 seconds to each score.

25 yards, two scores; 20 seconds to each score.

Rapid fire: 25 yards, two scores; 8 seconds to each score.

15 yards, two scores; 8 seconds to each score.

The total of all scores to be not less than 200 out of a possible 250 points.

(Reverse.)

The requirements for qualification given above are those prescribed for the organized Militia. However, the obverse and reverse of this score-card are given because the form is a good one, and not because of the information it may contain. In preparing a card of this kind the information as to windage and elevation should be changed to suit the rifle used.

*Revolver Classification (National Guard).*

The National Guard (Organized Militia) revolver course is divided into three classifications, viz.: Marksman, Sharpshooter, and Expert.

Target A is used in these courses, and not Target N, as in the Army course.

The course is as follows:

15 yards: 2 scores, rapid fire, ten seconds to each score of 5 shots.

25 yards: 2 scores, rapid fire, ten seconds to each score of 5 shots.

25 yards: 2 scores, timed fire, thirty seconds to each score of 5 shots.

50 yards: 2 scores, slow fire, one minute to each shot; 5 shots to each score.

The percentage necessary to qualify as Marksman: 65 per cent of possible score, or 130 out of a possible 200.

Revolver Sharpshooter: 80 per cent of possible score, or 160 out of a possible 200.

Expert qualification is open to Sharpshooters only. The course is as follows:

15 yards: 2 scores, rapid fire, eight seconds to each score of 5 shots.

25 yards: 2 scores, rapid fire, eight seconds to each score of 5 shots.

25 yards: 2 scores, timed fire, twenty seconds to each score of 5 shots.

50 yards: 2 scores, timed fire, twenty seconds to each score of 5 shots.

75 yards: 2 scores, slow fire, twenty seconds to each shot, 5 shots to each score.

Necessary to qualify as Expert: 80 per cent of possible score, or 200 out of a possible 250 points.

Those who qualify in the different grades are designated as "Revolver Marksman," "Revolver Sharpshooter," and "Revolver Expert," and will be entitled to wear insignia indicating the qualification attained.

A Marksman wears a pin bearing the inscription, "Revolver Marksman"; a Sharpshooter wears a badge consisting of a cross pendant from a pin bearing the inscription, "Revolver Sharpshooter"; an Expert wears a badge consisting of two revolvers crossed, superimposed upon a laurel wreath, the whole suspended from a pin bearing the inscription, "Revolver Expert." These insignia will be of bronze.

The medals for competitions in a State are designated by the State.

## COURSE OF RIFLE-FIRING PRESCRIBED FOR CIVILIAN, COLLEGE, AND SCHOOL-BOY CLUBS.

*Approved by the National Board for Promotion of Rifle Practice and the Secretary of War—Civilian Rifle Clubs—Third Class.*

Special Course C, War Department, the course prescribed for the Organized Militia, is also prescribed for civilian clubs, designated as Third Class.

Members qualifying in the several classes—i. e., Marksman, Sharpshooter, and Expert—will receive a lapel button (see Figs. 66, 67, and 68), showing class in-



Fig. 66.

Lapel Button given for Marksman's qualification, Civilian Rifle Clubs.



Fig. 67.

Lapel Button given for Sharpshooter's qualification, Civilian Rifle Clubs.



Fig. 68.

Lapel Button given for Expert qualification, Civilian Rifle Clubs.

to which he has qualified, and his name will be recorded in the office of the Adjutant General of the Army at Washington.

The requirements for classification as Marksman, Sharpshooter, and Expert are the same as given in this chapter for the Organized Militia. (Special Course C.)

The member will start his firing at each range by taking two sighting shots (trial shots); the record firing is then commenced, and each group of five consecutive

shots constitutes a string and must be so counted. It is not allowable to select any group of five shots in a continuous line of shots and call such selected group a string.

*College and University Clubs.*—Fourth Class.

The clubs in this class fire the same course prescribed for the Organized Militia and Third Class clubs.

*School-boy Clubs.*—Fifth Class.

The following course has been recommended by the National Board for the Promotion of Rifle Practice and approved by the Secretary of War for clubs of the Fifth Class, known as School-boy Clubs.

INDOOR COURSE.

Each member not over eighteen years of age will fire 10 shots standing and 10 shots prone (lying down) at 50 feet on the N. R. A. gallery target. (See Fig. 54.) No sighting shots allowed. Rifle: any .22 caliber rifle with sights (other than telescopic) in front of the firing-pin; ammunition: any; position: both the body and the rifle must be free from all artificial support. Use of strap (gun-sling) allowed in the prone position.

Qualifying score for Junior Marksman: A competitor must make not less than 38 points standing and 42 points prone, or a total score of 80 points out of a possible 100. Competitors making less than 38 points at the

standing position will not continue firing at the prone position. This does not apply when the National Rifle Association medal competition (Members' Match) is combined with the qualification shooting.

Prize: A silver lapel button (Fig. 69) will be is-



Fig. 69.

**Junior Marksman's Indoor Medal.**

sued free by the Secretary of the National Rifle Association to those members making a qualifying score on receipt of the targets properly certified to by an officer appointed for that purpose by the Association.

Official targets for Junior Marksman's qualifications are issued free to affiliated school-boy clubs by the Association.

**JUNIOR MARKSMAN—OUTDOOR QUALIFICATION.**

Each member not over eighteen years of age will fire 10 shots standing and 10 shots prone at 200 yards on the U. S. Army Target A. (See chapter on "Targets.") Two sighting shots will be allowed on commencement of the score. Arm: U. S. rifle or carbine (present or past types), or any military rifle viewed and stamped by the National Rifle Association; ammunition: any; position: both the body and the rifle must be free from artificial support. Use of sling allowed in the prone position.

Qualifying score: A competitor must make not less than 35 points standing and 40 points prone, or a total of 75 points out of a possible 100. Competitors, making less than 35 points at the standing position will not continue firing at the prone position.

Prize: A bronze medal (see Fig. 70) will be is-



Fig. 70.

**Junior Marksman's Outdoor Medal.**

sued free to each of those members making a qualifying score, on receipt of the official score-card properly certified to by an officer appointed for that purpose by the National Rifle Association. Official score-cards are issued free to clubs on request.

*National Rifle Association School-boy Club Members' Competitions.*

The National Rifle Association will present to each school-boy rifle club affiliated with it a medal, mounted

in a red leather case (see Fig. 71), for competition



Fig. 71.

Medal given to Schoolboy Clubs for competition among their members.

among their members. These medals are presented each year. The conditions of the firing for the medal is the same as the Junior Marksman's competition. The two competitions may be consolidated if desired. When the medal is competed for, at least ten members must take part in the match, which must be held under the supervision of an officer appointed by the National Rifle Association.

### *Interschool Competitions.*

The National Rifle Association is prepared to donate a silver cup as an interschool championship prize in any city where three or more schools will co-operate to hold an annual tournament.



The Association will also donate a bronze cup for an interclub match between National Rifle Association

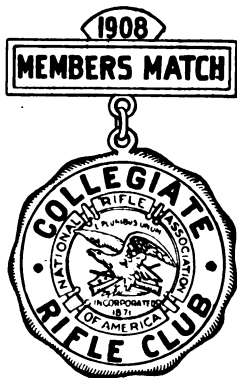


Fig. 72.

Medal given to College and University Clubs for competition among their members.

school clubs in connection with above mentioned tournaments.

### *Intercollegiate Matches.*

There are held annually indoor and outdoor intercollegiate matches, the members of the competing teams being undergraduates of recognized universities and colleges. A regular schedule is arranged. Matches are shot on the home range or gallery of each team, the targets being certified to by a judge appointed by the National Rifle Association.

There are two leagues in the intercollegiate shooting, viz.: the Eastern League and Western League, the

Mississippi River forming the general dividing line. The winner in each league is determined by the number of matches won and lost. The United States Intercollegiate championship is decided by a match between the winner in each league. It is contemplated abolishing the arrangement of the two leagues by territorial limits, and organizing a Class A and Class B league, the assignment to either class depending on average scores made by a team the previous year.

#### *Annual Matches.*

In addition to the above there are annual matches of the National Board for the Promotion of Rifle Practice, both for the rifle and revolver, open to members of the National Rifle Association and affiliated clubs. In these matches are opportunities for individual competition. Medals, trophies, and cash prizes are awarded.

The National Rifle Association holds annual matches, at which there are offered numerous medals, trophies, and cash prizes for teams and individuals, for both rifle and revolver competition. Also percentage medals are given by some State Associations for obtaining a certain per cent of the possible at various ranges. The headquarters of the National Rifle Association is in Washington, D. C.

#### *United States Revolver Association.*

The United States Revolver Association holds an-

nual indoor and outdoor matches, and offers medals and trophies to successful competitors in matches in the several classes.

It also offers honorary prizes, State championship medals, and percentage medals. These latter medals are awarded to any member of the Association making the requisite scores, as follows:

**Deliberate Fire (ten shots on each target).**

Percentage Required.	Possible.	Medal.
80 or better	100	Bronze.
85 or better	100	Bronze and Silver.
90 or better	100	Bronze and Gold.
93 or better	100	Silver and Gold.
95 or better	100	Gold.

**Rapid Fire (five shots on each target, to be fired within time-limit of 15 seconds).**

Percentage Required.	Possible.	Medal.
33 or better	50	Bronze.
36 or better	50	Bronze and Silver.
39 or better	50	Bronze and Gold.
41 or better	50	Silver and Gold.
43 or better	50	Gold.

The rules governing these percentage matches are:

**Target:** Standard American (see chapter on "Targets"). For shooting deliberate fire on indoor ranges the indoor 20-yard target is used. (See Fig. 42 for actual size of the bull's-eye of this target.)

These targets numbered and signed will be supplied by the United States Revolver Association at ten cents

each. Ten shots to the target in deliberate fire constitute a score.

It takes ten of these targets containing the percentage as shown in the above table to secure a medal. The targets need not be consecutive. For instance: should you be trying for the 80 per cent medal, and fire ten scores (ten targets) to-day, and out of the ten have only four targets which run 80 or better, these may be retained until you get six more, when the ten can be turned in for the medal. Or should you in firing the ten scores make some targets running 85 or better, or 90 or better, or any other percentage higher than the 80, these may be retained until you have succeeded in making ten of them when they may be turned in for the medal the value of your targets call for.

**Position:** The shooter must stand free from any artificial support and hold the pistol or revolver in one hand with arm extended so as to be free of the body.

**Deliberate Fire:** All the time you choose to take.

**Rapid Fire:** Each score of five must be fired within a limit of fifteen seconds.

**Range:** The distance for rapid fire is 50 yards, outdoors, and for deliberate fire may be 50 yards or 20 yards; but if at 20 yards, the shooting must be done in artificial light. In all cases the shooting must be done on the grounds or in the gallery of a regularly organized shooting club, or military organization, in the presence

of at least two witnesses, one of whom must be an officer of the organization or club. After the shooting the targets must be verified as to distance and score, and other conditions of the match certified to by the organization officer over his signature.

Figures 73 and 74 show the United States Revolver

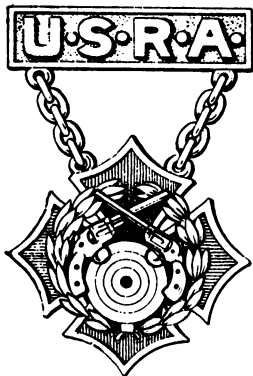


Fig. 73.

Medal for Deliberate Fire Scores, United States Revolver Association.



Fig. 74.

Medal for Rapid Fire Scores, United States Revolver Association.

Association percentage medals. 'This Association also gives National Championship and sub-championship medals; also State Championship and sub-championship medals. There are also honorary medals for all who make certain percentages of the possible in the National and State Championship competitions. The headquarters of the United States Revolver Association is in Springfield, Mass.

*Other Contests.*

In addition to the above, there are numerous private clubs and clubs affiliated with the national associations which offer percentage medals, competition medals and trophies, and other rewards to their members. These clubs may be found in any large city, and many of the smaller towns and cities have excellent shooting organizations.

Private shooting galleries frequently offer substantial rewards to successful competitors firing on their range. These usually are in the form of fancy match-boxes, suit-cases, firearms, etc. Some excellent small-caliber shots are frequently developed among patrons of these private galleries.

The United States Gallery Association has targets for qualification shooting in many of the best private galleries. It also places its targets with armories, college and school-boy clubs, and private shooting organizations having indoor shooting facilities. The headquarters of this Association is in Schenectady, N. Y. The trophies awarded are cups, etc.



## CHAPTER XI.

### MODEL SCORES.

That the student in shooting may know how he is progressing with his work, it is well that he should have before him some of the records which have been made by men at the top, or nearly there, of the shooting game. This is especially necessary where the student has had no opportunity to meet with and observe the work of these marksmen.

The student will find in this chapter records and specimen targets made by the Nation's best shots, using several different arms, and under varying conditions. Any of these records may be taken as a standard of excellence to which he may aspire, and since there is a continual improvement in firearms and ammunition, he should always bear in mind that it is possible for him to beat these scores, but it means a great deal of work and strict application.

It is hoped that this chapter will also aid some in dispelling the popular fallacy as to the expertness of some shots, usually cowboys, plainsmen, or other persons equally as inaccessible. Everybody has heard of that wonderful cowboy who could "throw a handful of walnuts into the air and crack all of them with his six-shooter before they struck the ground," and of that won-

derful squirrel-hunter who could "drive a nail every shot at 50 yards."

There are no doubt some excellent shots among plainsmen and cowboys, and the squirrel-hunter seldom misses a squirrel, but the phenomenal shots you hear of certainly can do no better than the maximum efficiency of the rifle and the ammunition, which would spoil these good stories even if the shooter were absolutely perfect in his holding and sighting, an accomplishment no human being has been able to acquire.

The revolver and rifle work of plainsmen and cowboys, though greatly exaggerated, is in many instances good; but none of them would cause any excitement at the average revolver club meet or on a military rifle range.

Many of the cowboys are fairly good "snap-shots," as they term it; that is, firing without aiming, simply pointing in the direction of the object aimed at. The best of this kind of work is rough shooting compared with the work of the trained rapid-fire shot. There are plenty of men who can fire five shots in eight seconds and aim every shot; but work of this kind will seldom bring more than 85 to 90 on Target N (see "Targets") at 25 yards, though possibles have frequently been made. The cowboy's work of snap-shooting usually consists in riding past fence-posts, trees, etc., and hitting them as he goes by.

A recent account appearing in an Eastern paper of



a general in the insurgent army in Mexico stated that one of his stunts was to "hit a fly on a peon's nose at 200 yards." This was no doubt gulped down by the public with dilated eyes. When it is considered that the best made rifle barrel, shooting the best made ammunition, sighted in a machine test, will seldom group five shots in a 1½-inch circle at this range, the fallacy of this report will be evident. If this accomplished individual were perfect as a shot, there are other things which would place the peon in a very precarious position, and his chances of becoming hit would be many times that of the fly. It would be a safe venture to guess that the "general" would, way down in his heart, consider he had done wonderfully well if he should succeed in hitting a good-sized dog, off-hand, at this range.

There are always three things which make perfect shooting impossible, viz.: the mechanical defects of the best made firearms, the imperfection of the best made ammunition, and the fallibility of human eyesight, muscles, and brain.

The best shots are usually specialists; that is, they either make a specialty of revolver, heavy rifle, small-bore rifle, or some other class of shooting. It is even the case that with the high-power rifle some shots are good at long range and can make but fair scores at mid range and short range, and *vice versa*. It will usually be found, however, that the man who is a successful shot with a particular kind of firearm and at his favorite range can

usually make a good showing with any kind of firearm at any distance. He has mastered the art of holding, trigger-pull, and sighting, which are not dissimilar in principle in any of them.

### *Scores at National Matches.*

The National Matches are held annually, and the teams participating represent the Army (two: one infantry and one cavalry), the Navy, the Marine Corps, the United States Military Academy, the United States Naval Academy, the Organized Militia and Naval Militia of the several States and Territories. The men constituting these teams represent the best eligible shots of the several organizations, and the scores made at the National Match can be said to represent the best high-power rifle shooting in the United States—or in the world, for that matter.

The following tables give the scores made by the members of the winning teams for the years 1909, 1910, and 1911. The matches were held on the Ohio State Rifle Range at Camp Perry, Ohio, which ranks among the best rifle ranges in the world. The scores of the National Revolver Match, which takes place at the same meet, are also given; also the prizes given in each. The low scores in the Revolver Match for 1910 are accounted for by the very bad weather conditions prevailing at the time the shooting took place.

These scores were made with the military rifle and revolver, shooting full service loads—that is, the same weight bullet and same amount of powder used in these arms in times of war.

# NATIONAL RIFLE MATCH.

## WINNING TEAM NATIONAL TEAM MATCH, 1909.

### UNITED STATES NAVY.

Members of team. (Name, rank, and organization.)	Slow fire.					Total.	Rapid fire.		Total slow fire and rapid fire.	Skirmish fire.					Score.	
							200 yards.	200 yards.		Points deducted for penalties.	Number of hits.					
	200 yards.	600 yards.	800 yards.	1 000 yards.	Total.						2's.	3's.	4's.	5's.		
Andrew D. Denny, midshipman...	46	49	45	47	186	40	226	..	16	..	96	322				
Willis A. Lee, jr., midshipman...	42	48	49	46	179	38	217	..	18	..	98	315				
Thaddeus A. Thomson, ensign...	38	44	49	49	189	36	225	..	14	..	93	318				
Ralph R. Stewart, ensign...	46	49	47	40	186	41	227	..	12	..	90	317				
Robert C. Giffen, ensign...	44	42	47	44	182	35	217	..	13	..	91	308				
Francis A. L. Vossler, midship'n.	46	48	50	42	183	40	223	..	14	..	89	312				
Stephen Doherty, ensign...	43	48	48	44	186	40	226	..	18	..	97	323				
Llewellyn R. Hughes, seaman...	42	45	48	47	177	40	217	..	17	..	97	314				
William F. Amsden, midship'n...	43	46	49	48	182	37	219	..	18	..	98	317				
Carl T. Osburn, midshipman...	46	47	49	47	180	38	218	..	16	..	95	313				
Eugene E. Wilson, midshipman...	42	45	47	45	187	42	229	..	16	..	96	325				
Walter LeR. Heiberg, midship'n...	44	48	47	47	185	41	226	..	12	..	91	317				
3,801																

(Name, rank, and organization.)

First prize, Class A—National Trophy, \$450 in cash, and to each member of the team a medal.

# NATIONAL RIFLE MATCH.

## WINNING TEAM NATIONAL TEAM MATCH, 1910.

### UNITED STATES ARMY INFANTRY.

(Name, rank, and organization.)

Members of team. (Name, rank, and organization.)	Slow fire.			Rapid fire.	Total slow fire and rapid fire.		Skirmish fire.			Aggregate.	
	200 yards.	600 yards.	1,000 yards.		200 yards.	4's.	8's.	Number of hits.	Points deducted for penalties.		Score.
Frederick W. Coleman, captain, 10th Inf.	44	45	50	139	47	186	4	12	76	262	
John Grandy, 1st serg't, Com'y E, 28th Inf.	46	49	49	144	43	187	6	10	74	261	
Geo. Sayer, battalion serg't major, 15th Inf.	46	49	47	142	48	190	9	9	90	280	
Emil Glarner, corporal, Com'y K, 15th Inf.	42	46	47	135	47	182	8	13	97	279	
Edgar Z. Steever, 3d, 2d lieu't, 11th Inf.	42	46	38	126	47	173	4	14	86	259	
Courtney H. Hodges, 2d lieu't., 13th Inf.	47	44	34	125	49	174	5	13	85	259	
Robert H. Allen, captain, 29th Infantry.	45	49	45	139	39	178	7	13	93	271	
Allan L. Briggs, 1st lieutenant, 29th Inf.	47	49	44	140	41	181	8	10	82	263	
Blaine A. Dixon, 2d lieutenant, 15th Inf.	46	47	41	134	45	179	8	9	77	256	
H. A. Whitaker, serg't, Com'd A, 15th Inf.	43	44	40	127	46	173	9	10	86	265	
Wm. B. Wallace, 1st lieutenant, 20th Inf.	43	44	45	132	45	177	7	12	88	265	
H. E. Stadie, 1st serg't, Com'y L, 30th Inf.	48	44	43	135	46	181	4	15	91	272	
										8,186	

First prize, Class A—National Trophy, \$450 in cash, and to each member of the team a bronze medal.

# NATIONAL RIFLE MATCH.

## WINNING TEAM NATIONAL TEAM MATCH, 1911.

UNITED STATES MARINE CORPS.

Members of team,  
(Name, rank, and organization.)

	200 yards. slow fire.	200 yards. rapid fire.	600 yards. slow fire.	1,000 yards. slow fire.	Total slow fire and rapid fire.	Skirmish fire.	Aggregate.
Victor H. Czegka, 1st sergeant.....	44	44	50	40	178	86	264
Claude H. Clyde, sergeant.....	44	46	46	43	179	99	278
Charles A. Johnson, gunnery sergeant.....	45	46	45	43	179	88	267
John J. Andrews, sergeant.....	40	46	45	45	175	90	265
Thomas Holcomb, jr., captain.....	43	42	48	40	173	85	258
Walter M. Randle, private.....	41	44	44	42	171	85	256
Ralph S. Keyser, 1st lieutenant.....	41	41	44	42	172	91	263
Marion B. Humphrey, 2d lieutenant.....	40	42	47	39	168	91	259
Calvin A. Lloyd, corporal.....	41	47	46	39	173	93	266
Archie Lewellen, sergeant.....	43	46	48	36	173	90	263
Tom Worsham, corporal.....	47	46	48	39	180	95	275
Otto M. Schriver, sergeant.....	43	46	46	39	174	92	266
							3,180

First prize, Class A—National Trophy \$450 in cash, and to each member of the team a bronze medal.

# NATIONAL PISTOL (REVOLVER) MATCH, 1909.

Order of merit.	Successful competitors.	Slow fire.			Timed fire.			Total slow fire and timed fire.			Rapid fire.			Aggregate.	
		75 yards.			25 yards.			50 yards.			15 yards.				Total.
1	Walter C. Short, 1st lieutenant, 16th United States Infantry, gold medal and \$30 cash).....	73	93	88	181	254	95	89	184	438					
2	Le Roy E. Lyons, private, Troop D, 1st Colorado Cavalry (Gold medal and \$25 cash).....	76	96	82	178	254	96	86	182	436					
3	John H. Snook, private, Troop B, Ohio Cavalry (gold medal and \$20 cash).....	85	88	86	174	259	94	82	176	435					
4	John D. Burnett, jr., 2d lieutenant, 17th United States Infantry (gold medal and \$20 cash).....	81	94	86	180	261	95	79	174	435					
5	Frank Parmley, 2d lieutenant 1st Kansas Infantry (silver medal and \$15 cash).....	77	93	87	180	257	93	82	175	432					
6	William R. Murphy, quartermaster sergeant, Ordnance Department, Massachusetts (silver medal and \$15 cash).....	71	93	83	176	247	92	92	184	431					
7	Arthur Smith, private, Troop B, 1st Colorado Cavalry (silver medal and \$15 cash).....	86	92	77	169	255	91	84	175	430					
8	Willis A. Lee, jr., midshipman, United States Navy (silver medal and \$15 cash).....	79	97	81	178	257	88	83	171	428					
9	William N. Puckett, ordnance sergeant United States Army (bronze medal and \$10 cash).....	82	96	74	170	252	90	83	173	425					

## NATIONAL PISTOL (REVOLVER) MATCH—CONTINUED.

10	John J. Daerda, sergeant, Troop F, 15th United States Cavalry (bronze medal and \$10 cash).....	72	96	88	184	256	91	78	169	425
11	Isaac S. Martin, 1st lieutenant, 14th United States Cavalry (bronze medal and \$10 cash).....	71	96	80	176	247	94	83	177	424
12	Reginald H. Sayre, 1st lieutenant, Ordnance Department, New York (bronze medal and \$10 cash).....	78	93	78	171	249	93	82	175	424
13	Clarence E. Orr, Alton Rifle Club (bronze medal and \$5 cash).....	72	85	80	165	237	96	88	184	421
14	August C. Nissen, captain, 5th United States Cavalry (bronze medal and \$5 cash).....	70	95	75	170	240	94	86	180	420
15	Oley Bonar, squadron sergeant major, 4th United States Cavalry (bronze medal and \$5 cash).....	70	98	84	182	252	90	78	168	420
16	Robert B. Dennis, private, Troop A, Ohio Cavalry (bronze medal and \$5 cash)	82	90	81	171	253	91	76	167	420
17	Eugene G. Reisinger, musician, Company A, 1st Connecticut Infantry (bronze medal and \$5 cash).....	73	84	80	164	237	97	85	182	419
18	Jens E. Stedje, 1st lieutenant, 4th United States Cavalry (bronze medal and \$5 cash).....	80	92	73	165	245	91	83	174	419
19	Morton C. Mumma, 1st lieutenant, 2nd United States Cavalry (bronze medal and \$5 cash).....	73	95	77	172	245	95	77	172	417
20	Alexander J. Macnab, captain, 27th United States Infantry (bronze medal and \$5 cash).....	73	94	77	171	244	83	87	170	414

**Special Prizes.**—Gold medal and \$10 cash to competitor making highest total score in slow fire: Won by William A. Renehan, ordnance sergeant, Maryland.

Score, 86 out of possible 100.

Gold medal and \$15 cash to competitor making highest total score in timed fire: Won by John J. Daerda, sergeant Troop F, 15th United States Cavalry. Score, 184 out of possible 200.

Gold medal and \$15 cash to competitor making highest total score in rapid fire: Won by William R. Murphy, quartermaster sergeant, Ordnance Department, Massachusetts. Score, 184 out of possible 200.





# NATIONAL REVOLVER MATCH 1910, CONTINUED.

11	Samuel J. Fort, major, ordnance department, Maryland (bronze medal and \$10 cash).....	65	91	68	159	224	83	79	162	386
12	Herman E. Stadler, 1st sergeant, Company L, 30th United States Infantry (bronze medal and \$10 cash).....	57	90	65	155	212	95	78	173	385
13	Morton C. Mumma, 1st lieutenant, 2d United States Cavalry (bronze medal and \$5 cash).....	62	85	74	159	221	84	80	164	385
14	Gerald C. Brant, 2d lieutenant, 9th United States Cavalry (bronze medal and \$5 cash).....	59	86	59	145	204	97	83	180	384
15	Thomas M. Hunter, 1st lieutenant, 26th United States Infantry (bronze medal and \$5 cash).....	46	93	69	162	208	94	81	175	383
16	William H. Spencer, 1st sergeant, Company G, 1st Missouri Infantry (bronze medal and \$5 cash).....	56	90	68	158	214	83	84	167	381
17	Jerome Grabenzech, sergeant, Troop H, 4th United States Cavalry (bronze medal and \$5 cash).....	69	85	64	149	218	79	81	150	378
18	Clarence E. Orr, Alton Rifle Club (bronze medal and \$5 cash).....	64	91	71	162	226	87	65	152	378
19	Niels N. Orustrup, chief turret captain, United States Navy (bronze medal and \$5 cash).....	71	82	61	143	214	86	74	162	376
20	Clarence M. McCutcheon, corporal, Troop D, 1st Colorado Cavalry (bronze medal and \$5 cash).....	57	95	60	155	212	89	74	163	375

**Special Prizes.**—Gold medal and \$10 cash to competitor making highest aggregate score in slow fire: Won by Jay P. Hopkins, captain, Coast Artillery Corps, United States Army. Score, 73 out of possible 100.  
 Gold medal and \$10 cash to competitor making highest aggregate score in timed fire: Won by George C. Olcott, battalion sergeant major, 1st Missouri Infantry. Score, 174 out of possible 200.  
 Gold medal and \$10 cash to competitor making highest aggregate score in rapid fire: Won by Jay P. Hopkins, captain, Coast Artillery Corps, United States Army. Score, 185 out of possible 200.

# NATIONAL REVOLVER MATCH, 1911.

Order of merit		Slow fire.			Timed fire.			Total slow fire and timed fire			Rapid fire.			Aggregate
		75 yards	50 yards	25 yards	75 yards	50 yards	25 yards	Total.	15 yards.	25 yards.	Total.			
												Total.		
1	Earl D. Myrick, chief turret captain, United States Navy (gold medal and \$80 cash)	72	95	76	171	243	81	92	173	416				
2	Le Roy S. Lyon, private, Troop D, 1st Colorado Cavalry (gold medal and \$25 cash)	73	89	76	165	238	93	83	176	414				
3	Samuel Peterson 2d lieutenant, 1st Illinois Cavalry (gold medal and \$20 cash)	73	92	78	170	243	91	78	169	412				
4	Eugene G. Reising, musician, Company A, 1st Connecticut Infantry (gold medal and \$20 cash)	70	92	71	163	233	90	87	177	410				
5	Arthur Smith, cook, Troop B, 1st Colorado Cavalry (silver medal and \$15 cash)	71	79	74	153	224	94	85	179	403				
6	Morton C. Mumma, captain, 2d United States Cavalry (silver medal and \$15 cash)	60	88	72	160	220	96	86	182	402				
7	G. F. Hoffman, National Rifle Academy (silver medal and \$15 cash)	63	91	72	163	226	91	85	176	402				
8	Joseph V. Ogan, lieutenant, United States Navy (silver medal and \$15 cash)	68	85	77	162	230	88	83	171	401				
9	William S. McClintic, lieutenant, United States Navy (bronze medal and \$10 cash)	66	92	64	156	222	95	82	177	399				
10	Ernest Miller, 1st lieutenant and battalion adjutant, 1st Ohio Infantry (bronze medal and \$10 cash)	68	85	65	150	218	92	88	180	398				

NATIONAL REVOLVER MATCH, 1910—CONTINUED.

11	Frank P. Coffin, corporal, Troop C, 1st Colorado Cavalry (bronze medal and \$10 cash).....	64	91	78	169	233	89	75	164	397
12	J. J. Kane, Youngstown Revolver Club (bronze medal and \$10 cash).....	75	88	70	158	233	82	77	159	392
13	Clarence E. Orr, Alton Rifle Club (bronze medal and \$5 cash).....	61	87	71	158	219	94	78	172	391
14	Jay P. Hopkins, captain, Coast Artillery Corps, United States Army (bronze medal and \$5 cash).....	67	94	66	160	227	90	74	164	391
15	Edmund A. Ringland, captain, assistant inspector small-arms practice, 56th Iowa Infantry (bronze medal and \$5 cash).....	67	93	70	163	230	82	78	160	390
16	Robert M. Barr, 1st sergeant, Company G, 30th United States Infantry (bronze medal and \$5 cash).....	63	88	62	159	213	86	80	166	379
17	Lawrence C. Menager, captain, Ordnance Department, Florida (bronze medal and \$5 cash).....	65	76	77	153	218	85	76	161	379
18	Follette Bradley, midshipman, United States Navy (bronze medal and \$5 cash).....	64	87	68	155	219	90	70	160	379
19	Andrew P. Lauridsen, sergeant, Company A, 1st Connecticut Infantry (bronze medal and \$5 cash).....	70	94	55	149	219	88	69	157	376
20	William C. Stoll, 1st lieutenant, 29th United States Infantry (bronze medal and \$5 cash).....	76	89	56	145	221	93	61	154	375

**Special Prizes**—Gold medal and 10 cash to competitor making highest aggregate score in slow fire: Won by William C. Stoll, 1st lieutenant, 29th United States Infantry. Score, 76 out of possible 100.  
 Gold medal and \$15 cash to competitor making highest aggregate score in timed fire: Won by Earl D. Myrick, chief turret captain, United States Navy. Score, 171 out of possible 200.  
 Gold medal and \$15 cash to competitor making highest aggregate score in rapid fire: Won by Morton C. Mumma, captain, 2d United States Cavalry. Score, 182 out of possible 200.

*Other Scores with Rifle, Pistol, and Revolver.*

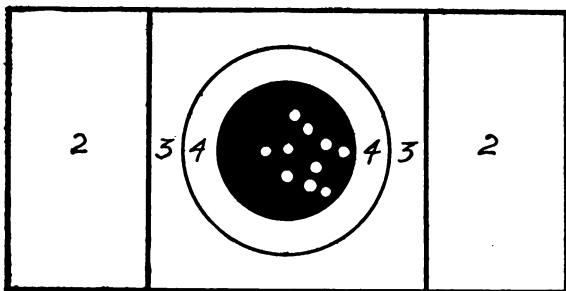
Corporal Perry Schofield, of Company E, 5th Regiment Infantry, Massachusetts Volunteer Militia, made 116 consecutive bull's-eyes at 500 yards, July 16, 1910, at Wakefield, Mass.

The 500-yard target is Target B, having a 20-inch bull's-eye. (See Fig. 46 for other dimensions of Target B.) This is a world's record. He used the U. S. Springfield Rifle, the Army rifle, Model 1903.

Colonel J. J. Dooley, of the National Guard of Maine, who witnessed this wonderful exhibition of marksmanship, says:

*"Schofield's Score*

Was 116 bull's-eyes: 114 shots for record and 2 sight-



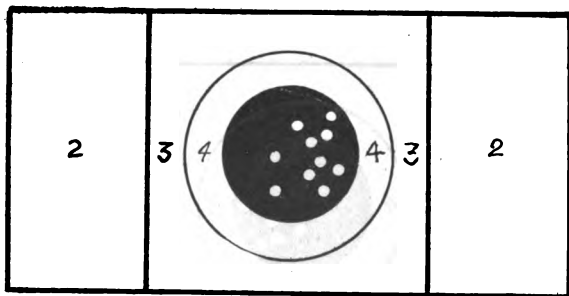
*Fig. 75.*

ing shots. The 2 sighting shots were a little below the center of the bull, to the left. The 114 shots for record

run from four to eight o'clock across the bull's-eye, gradually working up towards eleven o'clock. The 117th shot was a 4, just out, at eleven o'clock."

Figure 75 shows a ten-shot score made by Captain K. K. V. Casey, of Pennsylvania, at the Camp Perry (Ohio) rifle range, in August, 1910. The range was 800 yards on the Military Target C, having a 36-inch bull's-eye. Captain Casey used a U. S. Springfield, Model 1903 (the Army rifle), as did also Captain Wise.

Figure 76 shows a score of ten shots made by Captain Stuart Wise, of Massachusetts, at Camp Perry (Ohio) rifle range, in August, 1910. The range was



*Fig. 76.*

800 yards, and the target the Military Target C, having a 36-inch bull's-eye.

Fig. 77 is a composite target of 100 consecutive shots by Dr. W. G. Hudson, January 31, 1911, using a .22 caliber rifle and telescope sights, being a total of 2482



*Fig. 77.*

out of a possible 2500, a world's record. The distance was 25 yards and the cut is actual size of target.

Fig. 78 shows a composite of 100 consecutive shots by Arthur Hubalek, of Brooklyn, N. Y., fired on the

Zettler Rifle Club range in New York city, March 14, 1911, which won him the 100-shot Gallery Championship of America. It is a total of 2484 out of a possible 2500.



He used a Stevens-Pope-Ballard Schuetzen rifle with a Stevens cross-hair 6-power telescope sight. The rifle had a palm rest, and weighed 13 pounds. This beats Dr. Hudson's score of January 31st by two points.

Fig. 79 is a composite target of 50 consecutive shots with a .38 caliber revolver, 8-inch barrel, made by W. C. Ayer, of the St. Louis (Mo.) Revolver Club. It totals 461 out of a possible 500. Distance 20 yards, indoors. Cut is actual size of bull's-eye, containing 8, 9, and 10 count rings.



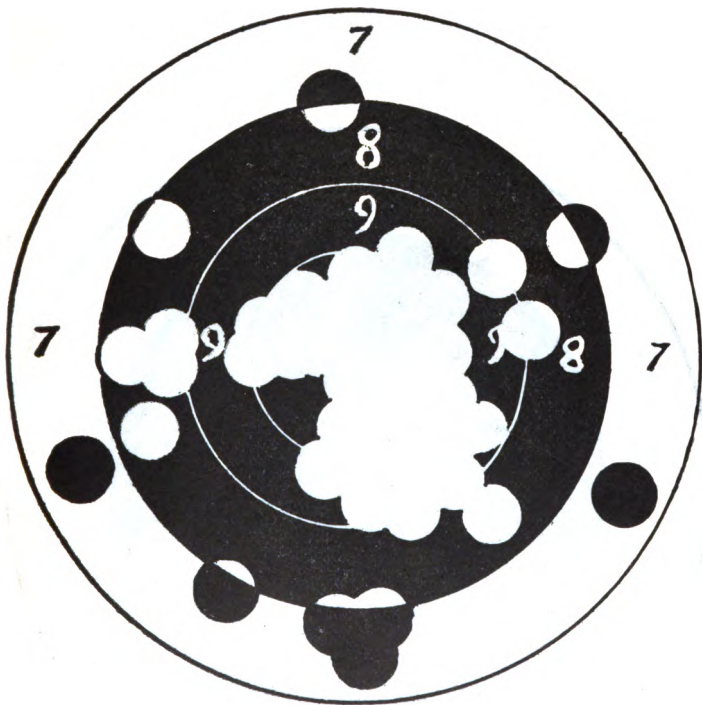


Fig. 79.

Fig. 80 is a composite target showing 25 consecutive shots with a .22 caliber pistol, being a total of 235 out of a possible 250. Made by Fred V. Berger, of the Seattle (Wash.) team. Shooting was at 20 yards, indoors, artificial light. Cut shows actual size of target, being the 50-yard Standard American reduced to the 20-yard range.

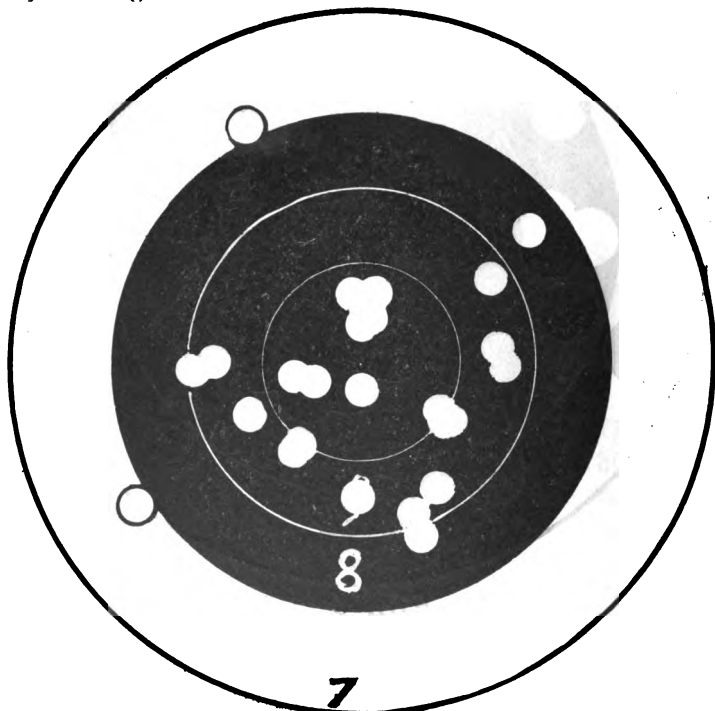
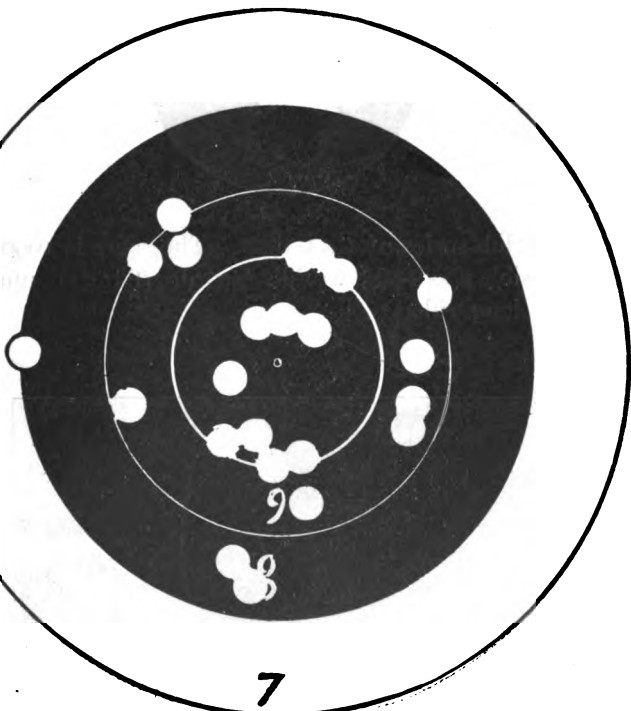
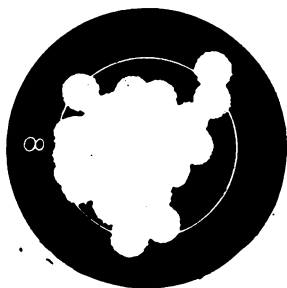
**Fig. 80.**

Fig. 81 is a composite of 25 successive shots by W. H. French, with a Pope 10-inch barrel, .22 caliber pistol, at 20 yards, indoors, with artificial light. A total of 235 out of a possible 250. Cut shows actual size of bull's-eye, containing 8, 9, and 10 rings. Fired February 15, 1911.



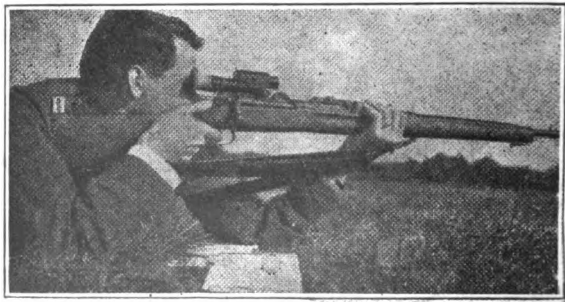
**Fig. 81.**

Fig. 82 is a composite target, actual size, of 200 shots fired by G. W. Chesley, in ten different matches in



**Fig. 82.**

the interclub series of 1911-1912. The score is 1990 out of a possible 2000—the world's record. The ammunition was .22 long rifle.



## APPENDICES.

## APPENDIX I.

## THE U. S. MAGAZINE RIFLE, MODEL 1903.

(The United States Military Rifle.)

Weight (without bayonet or sling), 8.69 pounds.

Length from muzzle to butt-plate, 43 inches.

Length of barrel, 23.75 inches.

Caliber, 30 hundredths of an inch.

Chambered for 1906 ammunition.

Weight of bayonet (without scabbard), 1 pound.

Type of bullet, "Spitzer," sharp pointed.

Weight of bullet, 150 grains.

Weight of cartridge, including bullet, powder, and case, 395.5 grains.

Bullet jacket is cupro-nickel.

Powder charge is 48 grains of pyro cellulose.

Chamber pressure per square inch, 49,000 pounds.

Number of grooves in rifling, 4.

Depth of grooves, .004 inch.

Width of grooves, .1767 inch.

Width of lands, .0589 inch.

Rifling has right-hand twist, one turn in 10 inches.

Velocity of bullet at muzzle, 2700 feet a second.

Maximum range of sight adjustment, 2800 yards.

Maximum range of rifle, 5465 yards.

Magazine holds 5 cartridges.

Magazine may be cut off and rifle used as single loader.

The "battle sight" (rear sight laid flat) adjusts for a range of 530 yards.

### *Sight Adjustments.*

A "point" on the wind-gauge equals 4 inches on the target for every 100 yards in range, or distance. For example: One "point" left windage at 600 yards would carry the bullet 24 inches further to the left than if wind-gauge stood at "zero." This ratio of increase is approximately correct, and is sufficient for all practical purposes.

Twenty-five yards increase or decrease of elevation on the rear sight produces the following changes at the target:

Range in Yards.	Effect on Target, in Inches.
200	1½
300	2¼
500	6¼
600	8½
800	15½
1000	25

When shooting rapid fire (battle sight), aim at bottom of the target. This should land the hit 4 inches from the bottom of the silhouette figure (see Target D).





See chapter on "Targets" for dimensions of targets at the various ranges.

For additional information about the Springfield Rifle, see chapter on "Nomenclature."

*APPENDIX II.**MILITARY MODELS OF REVOLVERS AND PISTOLS.**The Automatic Pistol.*

The Colt Automatic Pistol, caliber .45, Government Model, has recently been adopted by the United States Government for use by officers and soldiers as a hand-weapon. In time this arm will supplant the military model revolver.

The action is automatic, except that the trigger must be pulled to fire each shot. Continued discharge will not result from one pull of the trigger. The automatic feature simply ejects the empty shell, throws a loaded cartridge in the chamber, and cocks the piece. To fire, the trigger must be pulled.

*Method of Operating.*

A loaded magazine is placed in the handle, and the slide drawn fully back and released, thus bringing the first cartridge into the chamber, leaving the hammer cocked and the pistol ready for firing.

If it is desired to carry the pistol fully cocked, the safety lock may be pressed upward, thus positively locking hammer and slide. The safety lock is located within easy reach of the thumb of the hand holding the pistol



**Fig. 84.**

**Colt Automatic Pistol, Caliber .45, Government Model. The latest U. S. Army One-hand Weapon.**

and may be instantly pressed down when raising the pistol to the firing position.

To lower the cocked hammer, draw it back with the thumb until it forces the grip safety in flush with the frame; at the same time pull the trigger, then lower the hammer with thumb.

### *Safety Devices.*

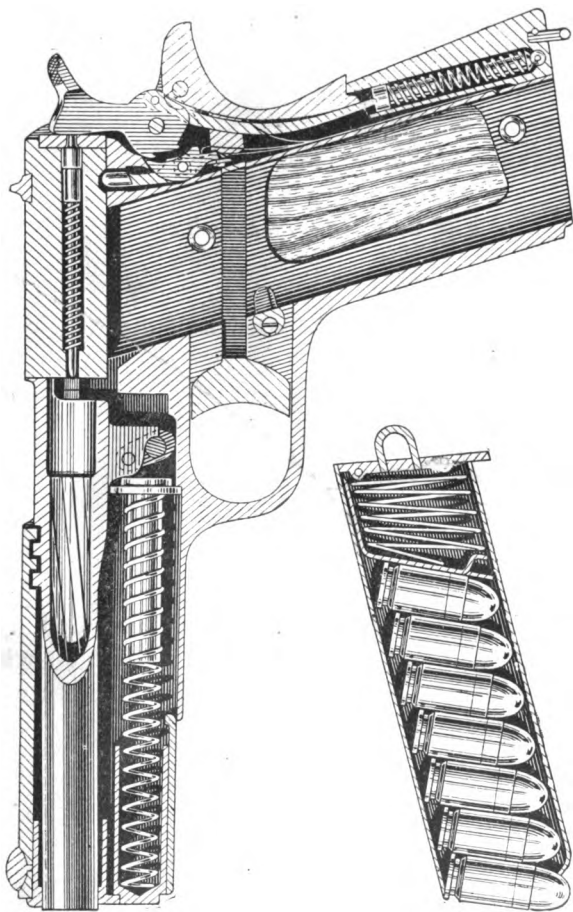
It is impossible for the firing-pin to discharge or even touch the primer, except on receiving the full blow of the hammer.

The pistol is provided with two automatic safety devices:

The automatic disconnecter, which positively prevents the release of the hammer unless the slide and barrel are in the forward position and safely interlocked; this device also controls the firing and prevents more than one shot from following each pull of the trigger.

The automatic grip safety, which at all times locks the trigger unless the handle is firmly grasped and the grip safety pressed in.

The pistol is in addition provided with a safety lock by which the closed slide and the cocked hammer may be at will positively locked in position.



**Fig. 85.**  
Cross Section of the New Automatic Pistol for the Army.

## MILITARY REVOLVERS.

*The Colt Military Revolver.*

Caliber, .38.

Double action. May be used as either single or double action.

Cylinder holds six cartridges.

Cylinder swings out to the left.

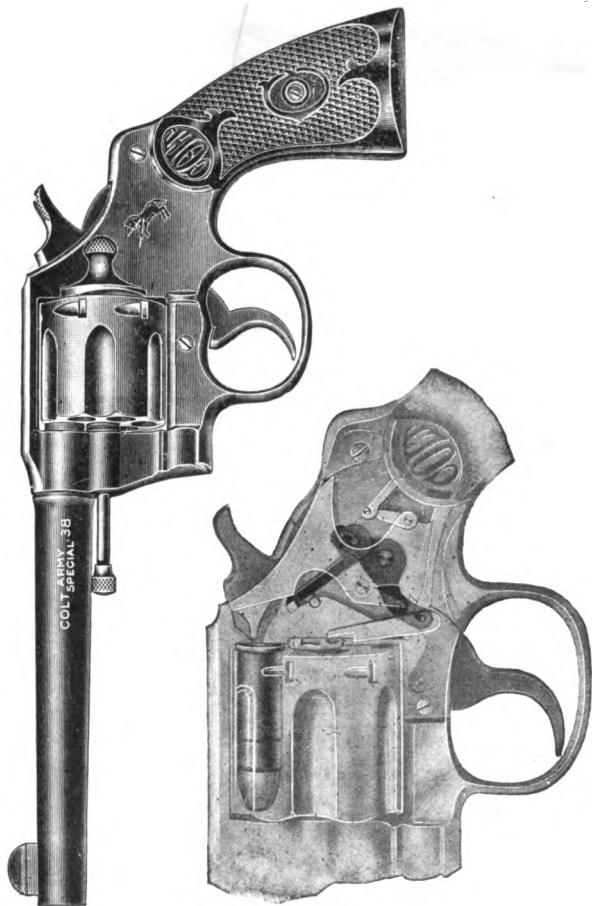
Jointless, solid frame.

Length of barrel, 2 1/2 inches.

Length over all, 11 1/4 inches.

Weight, 35 ounces.

Chambered for .38 Short Colt, .38 Long Colt, .38 Colt Special, and .38 S. & W. Special cartridges, with full, mid range, or gallery charge. Made in several models, as shown in illustrations.



**Fig. 86.**  
The Colts Army Special Revolver.

**Fig. 87.**

Colt Officer's Model; Military Revolver.

*Smith & Wesson Military Revolver.*

Caliber, .38.

Double action. May be used as either single or double action.

Cylinder holds six cartridges.

Cylinder swings out to the left.

Jointless, solid frame.

Length over all, 11¼ inches.

Weight, 32 ounces.

Chambered for Smith &amp; Wesson .38 Special and United States Service .38 cartridges. Will fire the same ammunition as the Colt's model.





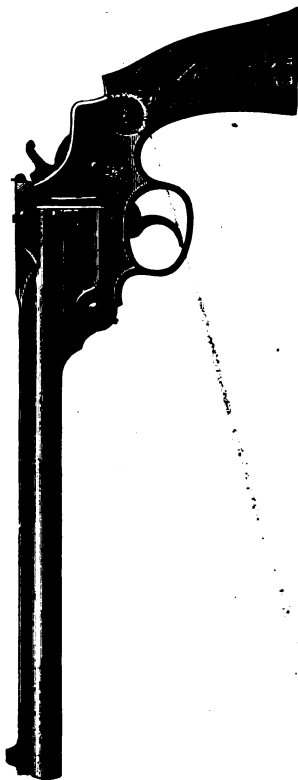
**Fig. 88.**  
**Smith & Wesson Military Model Revolver.**

*Target Pistols.*

Target pistols are designed for target shooting, and should be made with the greatest care. Particular attention is given to rifling the barrel. Most models are single shot, with "tip up," or "top break," ejection.

The barrels range from 6 to 12 inches in length. A 10-inch barrel is the popular length.

Most target pistols are chambered for .22 long, or .22 short cartridges, though some are made for .32 caliber.



**Fig. 89.**  
Smith & Wesson Target Pistol, 10-inch Barrel.



*“Every right-minded and patriotic citizen of the United States should be a good marksman. It is a duty he owes to his country under her present liberal institutions, which do not exact military service, but presume reliance in a large measure on citizen soldiery in case of war.”*













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